

**Development of Relationship Satisfaction Across the Life Span:  
A Systematic Review and Meta-Analysis**

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### Abstract

Previous research has not led to any agreement as to the normative trajectory of relationship satisfaction. In this systematic review and meta-analysis, we summarize the available evidence on development of relationship satisfaction, as a function of age and relationship duration. Data came from 165 independent samples including 165,039 participants. In the analyses, we examined cross-sectional information on *mean level* (i.e., the percent-of-maximum-possible [POMP] score at the first assessment) and longitudinal information on *mean change* (i.e., change in POMP scores per year). The mean age associated with effect sizes ranged from 20 to 76 years and the mean relationship duration from 3 months to 46 years. Results on mean levels indicated that relationship satisfaction decreased from age 20 to 40, reached a low point at age 40, then increased until age 65, and plateaued in late adulthood. As regards the metric of relationship duration, relationship satisfaction decreased during the first 10 years of the relationship, reached a low point at 10 years, increased until 20 years, and then decreased again. Results on mean change indicated that relationship satisfaction decreased within a given relationship, with the largest declines in young adulthood and in the first years of a relationship. Moderator analyses suggested that presence of children and measure of relationship satisfaction explained variance in the mean level. However, except for these two moderators, the pattern of findings held across characteristics such as birth cohort, sample type, country, ethnicity, gender, household shared with partner, marital status, relationship transitions, and dyadic data.

*Keywords:* relationship satisfaction; life-span development; longitudinal studies; meta-analysis

### Public Significance Statement

This systematic review and meta-analysis provides a robust picture of normative development of relationship satisfaction across the life span, focusing on the role of age and relationship duration in describing this pattern. On average, results indicated both decreases and increases in relationship satisfaction across the life span, but trajectories differed systematically between the time metrics. Specifically, the findings showed a U-shaped trend for age and a more complex, dynamic pattern for relationship duration.

## **Development of Relationship Satisfaction Across the Life Span:**

### **A Systematic Review and Meta-Analysis**

Romantic relationships are a central aspect of most people's lives. Research suggests that satisfaction with the romantic relationship is highly beneficial to well-being, health, and longevity (e.g., Proulx et al., 2007; Robles et al., 2014). Although most people wish to maintain a happy and fulfilling relationship, people's satisfaction with their romantic relationship often decreases over the years (Karney & Bradbury, 1995). For example, some studies suggest that people start with a high level of satisfaction, but gradually decline over time (e.g., Kurdek, 1999). Other studies suggest that this decline applies to only a minority of couples and that most couples experience no change or only minimal decline (e.g., Lavner & Bradbury, 2010). A recent review on this topic has emphasized the inconsistent pattern of findings (Karney & Bradbury, 2020). Furthermore, controversy exists regarding the time metric (i.e., age, relationship duration) that should be used to capture the development of relationship satisfaction (Anderson et al., 2010). Moreover, cross-sectional and longitudinal analyses have led to divergent conclusions about developmental trajectories of relationship satisfaction across the life span (for a discussion, see Bradbury & Karney, 2019).

In such situations, meta-analytic methods are ideally suited to deal with the heterogeneity of findings. By aggregating the evidence across a large number of studies, meta-analytic methods provide robust and precise insights into patterns of change. Therefore, the goal of the present research was to synthesize the available data on development of relationship satisfaction as a function of age and as a function of relationship duration. Moreover, we tested moderators of the development in relationship satisfaction to examine the robustness of the findings.

### **Relationship Satisfaction**

In this study, we use the term *relationship satisfaction* to refer to an individual's overall assessment of their romantic relationship (e.g., Fincham & Bradbury, 1987; Funk &

Rogge, 2007; Kamp Dush et al., 2008). Specifically, high relationship satisfaction is characterized by positive feelings and attitudes toward the relationship partner and often implies that individuals feel that their partner satisfies their needs (Fincham & Rogge, 2010).

Research suggests that romantic relationships have consequences for at least two important life outcomes: subjective well-being and health. First, people who are satisfied with their relationship are more satisfied with their life as a whole (Be et al., 2013; Headey et al., 1991; Proulx et al., 2007). Satisfaction in life domains such as work and friendships is far less predictive of people's overall happiness than is satisfaction in the romantic relationship domain (e.g., Glenn & Weaver, 1981; Headey et al., 1991; Heller et al., 2004; Umberson et al., 2006). Second, people who are in fulfilling relationships report better health (e.g., Bookwala, 2005; Kiecolt-Glaser & Newton, 2001; Proulx et al., 2007; Robles et al., 2014) and live longer than people in less stable relationships (e.g., Sbarra et al., 2011; Whisman et al., 2018). Thus, understanding the normative trajectory of relationship satisfaction may contribute to designing effective interventions aimed at improving well-being and health.

### **Two Time Metrics: Age and Relationship Duration**

As noted above, the development of relationship satisfaction can be mapped on at least two time metrics: age and relationship duration. However, for both metrics, empirical data have been inconsistent. Thus, prior research has not yet led to any agreement on the normative trajectory of relationship satisfaction as a function of age and of relationship duration (Anderson et al., 2010; Kamp Dush et al., 2008). Clearly, the time metrics of age and relationship duration are strongly correlated, given that people of higher age have often been in the same relationship for a much longer time than people of younger age, simply because they are older. Nevertheless, a substantial number of people separate from their partner and begin a new romantic relationship at all ages, including midlife and old age (Carr & Utz, 2020; Mehta et al., 2020). Even in young adulthood, the exact age at which people begin their first committed relationship varies substantially (Rauer et al., 2013). Thus, it is essential to

separate the two time metrics empirically. Moreover, as reviewed below, some hypothesized mechanisms of development refer to age, whereas other mechanisms refer to relationship duration, suggesting that it is also crucial to separate the time metrics theoretically.

### **Theoretical Perspectives on the Development of Relationship Satisfaction**

For understanding the development of relationship satisfaction, we draw from theoretical perspectives in developmental psychology, personality psychology, and relationship science. In the following, we distinguish between theories that allow the derivation of hypotheses about development of relationship satisfaction as a function of (a) age and (b) relationship duration.

### **Development of Relationship Satisfaction as a Function of Age**

Figure 1 provides an overview of the hypotheses about how relationship satisfaction develops as a function of age. We note that these hypotheses are based on core principles of each theory and that other hypotheses might be tenable. We also note that the trajectories shown in the figure are relatively simple trends and that the actual trajectories are most likely more complex (e.g., Eastwick et al., 2019).

#### ***Neo-Socioanalytic Theory***

A first theory that offers relevant insights is neo-socioanalytic theory (Roberts & Wood, 2006; see also Roberts et al., 2008). The theory provides a comprehensive account of how personality characteristics such as the Big Five personality factors, affective traits, and motives develop across the life span. A central tenet of the theory is the maturity principle of personality development, suggesting that people become more conscientious, socially dominant, agreeable, and emotionally stable as they go through life (Roberts et al., 2008). The maturity principle has been strongly supported by empirical findings (Bleidorn et al., 2009; Caspi et al., 2005; Lucas & Donnellan, 2011; Roberts et al., 2006; Specht et al., 2011). Moreover, research suggests that changes in the direction of greater maturity are particularly pronounced in young adulthood, but that people become still more mature during middle

adulthood (Roberts & Mroczek, 2008). A key mechanism that has been proposed for explaining this trend is that the adoption of age-graded social roles (such as the role of employee and relationship partner) leads to the acquisition of behavior that helps to better fulfill these roles (e.g., Bleidorn, 2015; Roberts & Wood, 2006; Roberts et al., 2005).

Development towards mature personality characteristics has important consequences for romantic relationships. Individuals who are agreeable, conscientious, and emotionally stable are likely to have more positive relationship experiences, resulting from more positive interactions with their partner and less critical interpretation of their partner's behavior (e.g., Donnellan et al., 2007; Finn et al., 2013; Karney & Bradbury, 1997; Malouff et al., 2010; Vater & Schröder-Abé, 2015). Positive relationship experiences, in turn, render people more satisfied in their romantic relationships. Hence, neo-socioanalytic theory suggests that relationship satisfaction increases in young adulthood and continues to increase, but less strongly, in middle adulthood. In late adulthood, mature personality traits such as emotional stability and conscientiousness show slight declines (Lucas & Donnellan, 2011; Specht et al., 2011). Thus, experiences in romantic relationships might become less favorable and relationship satisfaction might decrease in this life stage.

### ***Socioemotional Selectivity Theory***

In contrast, socioemotional selectivity theory suggests that relationship satisfaction increases in old age (see also Carstensen et al., 1999; Charles & Carstensen, 2010). According to this theory, as people become older, they increasingly perceive their remaining time as limited, which has implications for their well-being. Compared to younger adults, older adults focus more strongly on present-oriented goals than on future-oriented goals (Carstensen et al., 1999). As a consequence, in later life people select themselves into situations that maximize positive emotions and minimize negative emotions. If such selection is not possible, they regulate their emotions in an adaptive way (Charles & Carstensen, 2008; Charles & Piazza, 2009; Charles et al., 2009). Moreover, older adults invest more time and energy in positive

social relationships with close others, including romantic relationships. At the same time, they invest less in relationships with acquaintances and in relationships that frequently lead to negative interactions (Fredrickson & Carstensen, 1990; Fung et al., 1999). Thus, this age-dependent change in fundamental social motives might help explain why older people are more satisfied in their romantic relationships than their younger counterparts (Luong et al., 2011).

### *Developmental Task Theory*

A third theory that provides relevant insights into the development of relationship satisfaction is developmental task theory (Erikson, 1968; Havighurst, 1972). According to this theory, each life stage brings about new demands and expectations. In young adulthood, key developmental tasks include, for example, establishing long-lasting friendships and investing in the first longterm romantic relationship (Ebner et al., 2006; Heckhausen et al., 1989; Nurmi, 1992). In addition, young adulthood—and in particular emerging adulthood (Arnett, 2000; Shulman & Connolly, 2013)—is characterized by exploring different life paths and relationships. In fact, young adults leave unsatisfying romantic relationships and enter new romantic relationships more readily than people in middle or late adulthood (Halpern-Meekin et al., 2013; Mehta et al., 2020). Thus, although young adults may invest in the romantic relationship domain, their life situation allows them to more easily quit unhappy relationships. Consequently, those relationships that are being continued have a much higher likelihood of being fulfilling, which may result in an overall increase of relationship satisfaction in young adulthood.

In middle adulthood, key developmental tasks include consolidation (such as maintaining a satisfactory marriage) and generativity (Erikson, 1968; McAdams, 2015). Social relationships and social responsibilities are of particular importance during this life stage: People are embedded in longterm relationships, help their children to become responsible and happy adults, and care for the following generation (McAdams et al., 1993).

Hence, in middle adulthood, people spend a considerable amount of time and effort on social relationships, including their romantic relationship (Chopik et al., 2019). This investment could result in higher relationship satisfaction. At the same time, however, the large number of social, familial, and occupational responsibilities may lead to stress and interpersonal conflicts (e.g., Freund & Nikitin, 2012), which may offset potential gains in relationship satisfaction. Clearly, some individuals succeed in balancing the responsibilities in midlife. Others, however, might struggle with finding the right balance and focus on tasks in other life domains, such as work, to the disadvantage of their romantic relationship. In sum, these considerations suggest that average levels of relationship satisfaction may remain constant or slightly decline in midlife.

In late adulthood, a key developmental task consists in the avoidance of, or adjustment to, losses (Ebner et al., 2006; Freund, 2008; Heckhausen et al., 2010; Ogilvie et al., 2001). Social networks usually become smaller and social contact becomes less frequent with age (e.g., Sander et al., 2017; Wrzus et al., 2013), which gives the couple relationship a particularly important role in this life stage. These changes might lead to greater investment in the romantic relationship and, consequently, higher relationship satisfaction in late life.

### ***Perspective of Life-Satisfaction Research***

Finally, research on subjective well-being may have implications for understanding the development of relationship satisfaction as a function of age (e.g., Diener et al., 1999). Of particular relevance is the evidence on the cognitive component of subjective well-being, that is, life satisfaction (Diener, 1984; Diener et al., 1999; Lucas et al., 1996). Many studies suggest a U-shaped trajectory of life satisfaction in adulthood, with a decline in young and middle adulthood and an increase in late adulthood (Blanchflower & Oswald, 2008; Luhmann, 2017; Stone et al., 2010; for a review, see Hudson et al., 2019). In these studies, the lowest point varied from age 30 to age 60, corresponding to the notion of a midlife crisis (Freund & Ritter, 2009; Levinson et al., 1976). Given that relationship satisfaction is related



to life satisfaction (e.g., Be et al., 2013; Dyrdal et al., 2011; Gustavson et al., 2016), relationship satisfaction might show a pattern of change similar to life satisfaction.

### **Development as a Function of Relationship Duration**

Figure 2 provides an overview of the hypotheses about how relationship satisfaction develops as a function of relationship duration. Again, we note that these trajectories are relatively simple trends and that the actual trajectories are most likely more complex (for a recent article on different modeling approaches for attachment theory, see Girme, 2020).

#### ***The Honeymoon-is-Over Effect***

A first theoretical perspective that offers relevant insights is based on the honeymoon-is-over effect (Kurdek, 1998; 1999; see also Aron et al., 2002). This perspective, which is also referred to as the gradual disillusionment model (e.g., Huston et al., 2001; Huston & Houts, 1998), suggests that high initial levels of relationship satisfaction decrease with the duration of the relationship. At the beginning of a relationship, most couples find themselves in a honeymoon phase with mutual positive illusions (e.g., Kurdek, 1998, 1999; Murray et al., 1996). Over time, however, couples are confronted with daily routine and a reality check. Previous research has indicated that the risk of separation peaks at seven years of marriage (i.e., the 7-year itch; Diekmann & Mitter, 1984; Kulu, 2014; Kurdek, 1998, 1999). In sum, the honeymoon-is-over effect suggests that relationship satisfaction declines over the course of the relationship with the strongest declines in the first years of the relationship.

#### ***Social Ecological Models***

A group of theories that provide important insights are social ecological models. Example models include the family stress model (Hill, 1958; McCubbin & Patterson, 1983), the vulnerability–stress–adaptation model (Karney & Bradbury, 1995; Karney et al., 2005), and the stress–divorce model (Bodenmann, 1995). According to these models, romantic relationships are embedded in contexts (such as the working and family contexts; Bronfenbrenner, 1979; Reis & Rusbult, 2004; Wrzus et al., 2013), and stressors experienced

in these contexts can spill over into the romantic relationship (Lavner et al., 2012; Randall & Bodenmann, 2009). Although there are differences in how couples cope with these stressors (Bodenmann et al., 2015), most couples face an accumulation of external stressors with increasing duration of the relationship (e.g., child care). In sum, social ecological models suggest that relationship satisfaction tends to decrease over the course of the relationship.

### ***Attachment Theory***

Third, attachment theory may have implications for understanding the development of relationship satisfaction as a function of relationship duration (see also e.g., Bowlby, 1980; Hazan & Shaver, 1987). Specifically, people's internal working models of attachment styles matter for the adult romantic relationship (e.g., Hazan & Shaver, 1987). Typically, being in a romantic relationship fosters people's sense of security and satisfies their need to belong. In fact, people who marry become more securely attached (Crowell et al., 2002), and people who are more securely attached become more satisfied in their relationship over time (Bühler et al., 2020). In contrast, if people are insecurely attached, their relationship satisfaction is substantially lower and their trajectory of relationship satisfaction likely shows a less positive pattern (e.g., Candel, 2019; Li & Chan, 2012; Mikulincer & Shaver, 2007, 2013; Mirowsky & Kim, 2007). Yet, the majority of people in longterm romantic relationships are securely attached (Hazan & Shaver, 1987), and, thus, the hypothesis drawn from attachment theory applies to the majority of adults in relationships. In sum, these considerations suggest that relationship satisfaction increases over the course of the relationship.

### ***Relationship Stage Model of Sexual Desire***

Finally, the relationship stage model of sexual desire provides relevant insights for understanding the development of relationship satisfaction as a function of relationship duration (Birnbaum & Finkel, 2015). Specifically, the model highlights sexual desire as the central contributor to affectional bonds in romantic relationships (Birnbaum, 2016). Although the role of sexual desire may vary over the course of a relationship (Birnbaum & Reis, 2006,

2012; Bredow et al., 2008), sexuality is important in most romantic relationships and differentiates the romantic relationship from other close relationships (Butzer & Campbell, 2008; Laumann et al., 2006; Muise et al., 2016; Sprecher, 2002). At the beginning of the relationship, sexual desire is high but shows substantial decline over the course of the relationship (e.g., Beck, 1995; Brewis & Meyer, 2005; Clement, 2002; Levine, 2003). Weaker sexual desire, in turn, is associated with lower sexual frequency and lower satisfaction (e.g., Call et al., 1995; Schmiedeberg et al., 2017; Sprecher, 2002). Thus, the relationship stage model of sexual desire suggests that relationship satisfaction decreases with the duration of a romantic relationship.

### **Empirical Perspectives on the Development of Relationship Satisfaction**

As noted above, empirical findings on the development of relationship satisfaction have been inconsistent and led to conflicting interpretations of the evidence. Cross-sectional studies often suggested a U-shaped trajectory of relationship satisfaction, regardless of whether they examined change as a function of age (Gilford & Bengtson, 1979) or relationship duration (Anderson et al., 1983; Glenn, 1990; Orbuch et al., 1996). In contrast, longitudinal studies typically suggested that relationship satisfaction declines continuously, as a function of both age and relationship duration (e.g., Bradbury & Karney, 2004; Kurdek, 1998, 1999; Umberson et al., 2005; VanLaningham et al., 2001).

Possible explanations for this declining trend are gradual loss of positive illusions (e.g., Murray et al., 1996) and a lower frequency of sexual activity (e.g., Call et al., 1995), corresponding to theoretical perspectives reviewed above. However, there is also debate in the literature about the existence of such a decline in relationship satisfaction (e.g., Kurdek, 1998; VanLaningham et al., 2001). Moreover, researchers have suggested that the decline mainly occurs during major relationship transitions, such as the transition to parenthood (e.g., Mitnick et al., 2009).

More recent studies using statistical techniques such as latent class growth analysis (Jung & Wickrama, 2008) and group-based modeling (Nagin, 2005) indicate that trajectories vary significantly across different groups of couples (for an overview, see Karney & Bradbury, 2020). Overall, these studies suggest that the average decline of relationship satisfaction results from a subgroup of couples (i.e., 10–30%). For the majority of couples, however, no or only minor declines in relationship satisfaction were observed. For example, using longitudinal data across 20 years, Anderson et al. (2010) found that two-thirds of their sample were characterized by no significant change. Similarly, using longitudinal data of newlywed couples over the first 4 years of marriage, Lavner and Bradbury (2010) revealed that 80% of their sample experienced no or only minimal change in relationship satisfaction over time. This pattern was also found in other studies (Birditt et al., 2012; Foran et al., 2013; Lavner et al., 2012; Lorber et al., 2015). Nevertheless, despite significant interindividual (or between-couple) variability in change, it is important to note that the average trends observed in these studies corresponded to declines in satisfaction over time. Moreover, even if latent class analyses show that cases differ substantially in the developmental trajectory of a construct, research suggests that the distribution of the underlying differences is often continuous (Bauer, 2007). Therefore, in the present research, we examined both the average development of relationship satisfaction and moderating factors of this development. Specifically, we tested which factors may explain why some individuals show strong declines in relationship satisfaction, whereas other individuals show little decline, no change, or even an increase in their satisfaction with the romantic relationship.

### **Cross-Sectional and Longitudinal Information**

As noted above, research using cross-sectional data suggested different trajectories compared with research using longitudinal data (for a discussion, see Bradbury & Karney, 2019). In most research situations, longitudinal data allow for more valid conclusions about developmental patterns than cross-sectional data. The reason is that longitudinal data provide

direct evidence about change, whereas cross-sectional data provide evidence about differences between individuals (e.g., age differences or, relevant in the present context, relationship-duration differences). Although cross-sectional differences can result from developmental change (e.g., aging), they can also be caused by other factors. These factors include cohort differences (Baltes et al., 1979) or, more relevant for the time metric relationship duration, relationship dissolution when relationship satisfaction declines. Therefore, researchers who meta-analyze developmental patterns typically use effect size measures of mean change. Then, point estimates of the effect sizes can be used to graph change across time. For example, by using age-graded estimates of mean change, it is possible to plot a coherent trajectory across the age range covered by the samples included in a meta-analysis (for examples, see Orth et al., 2021; Orth et al., 2018; Roberts et al., 2006).

However, although the approach of estimating trajectories on the basis of mean change is valid with regard to many individual-difference constructs (such as the Big Five personality traits and self-esteem), it has important limitations when meta-analyzing the development of relationship satisfaction. A unique characteristic of the construct of relationship satisfaction is that it is tied to the specific relationship of the person and that relationship partners can, and often do, change across the life course. In other words, relationship satisfaction is not a pure characteristic of the individual (such as a personality trait), but it is conceptually related to the individual's specific environment (i.e., the relationship partner and characteristics of the specific relationship). Moreover, when people experience a relationship break-up and begin a new relationship, we expect that their satisfaction with the new relationship starts at a relatively high level again. This pattern should emerge even if their satisfaction with the previous relationship had been relatively low at the end of the relationship. In other words, when examining changes within a given relationship, we expect declines, but when examining changes across a person's relationships over time (e.g., observed after 1 year in each of a

person's relationships), the declines might be much smaller or even nonexistent. In fact, a recent study by Johnson and Neyer (2019) has observed this type of pattern.

Consequently, meta-analytic estimates of differences in means (i.e., the cross-sectional information) might provide even more valid conclusions about development of relationship satisfaction than meta-analytic estimates of mean change (i.e., the longitudinal information).

As noted above, these conclusions are valid as long as differences in means are not confounded by cohort effects (an assumption that we will test empirically in the analyses).

Therefore, in the present meta-analysis, combining the cross-sectional and longitudinal information will provide comprehensive and, arguably, the most valid information on the development of relationship satisfaction across the life span.

### **Moderators of Development in Relationship Satisfaction**

In this research, we tested for moderator effects of sample characteristics and methodological characteristics of the studies. Sample characteristics included birth cohort (indicated by mean year of birth), sample type, country, ethnicity, gender, household shared with partner, marital status, presence of children, occurrence of relationship transition, baseline mean of relationship satisfaction, variability in age, and variability in relationship duration. Methodological characteristics included time lag between measurement occasions, dyadic data, and measure of relationship satisfaction. We note that some characteristics that would be theoretically relevant could not be included for different reasons. First, some characteristics were generally not assessed in primary studies (e.g., personality traits such as neuroticism). Second, for some characteristics the available information was not comparable across most of the primary studies (e.g., information on socioeconomic status, which is reported with measures of class membership, occupational prestige, income, or level of education). Third, although we intended to test for the moderator effect of sexual orientation, only two eligible samples consisted of same-sex relationships (including a total of 204

participants), and the very low number of samples and participants would not have allowed for reliable conclusions about this sample characteristic.

### **Birth Cohort**

It is possible that the developmental patterns in relationship satisfaction have changed over the generations born during the past century. In fact, each generation has been raised in a specific socio-historical context, which may have influenced the needs and priorities in a romantic relationship (e.g., Bühler & Nikitin, 2020; Rogler, 2002). In particular, adults from more recent birth cohorts hold more liberal attitudes towards singlehood and re-partnering, which might affect the likelihood of entering and dissolving relationships (e.g., Böger & Huxhold, 2018; Teachman et al., 2000). However, little is known about cohort effects in the development of relationship satisfaction, which makes it important to test whether birth cohort (which will be operationalized in the analyses as the sample's mean year of birth) moderates the findings.

### **Ethnicity, Country, and Sample Type**

Studies focusing on specific ethnic groups raise the possibility that ethnicity moderates the development of relationship satisfaction (e.g., Birditt et al., 2012; Cutrona et al., 2003; Orengo-Aguayo, 2015; Stanik et al., 2013). For example, in the United States, differences in the socioeconomic conditions of ethnic groups might influence how romantic relationships develop across the life span (Birditt et al., 2012; Jackson et al., 2017). Specifically, research suggests that African American couples, compared to White couples, encounter more external stressors (e.g., financial strain, discrimination), which might contribute to lower levels of relationship satisfaction and higher divorce rates (e.g., Broman, 2005; Bryant et al., 2008).

Only a few studies have examined differences in satisfaction with romantic relationships across countries (for exceptions, see Dyrenforth et al., 2010; Heiman et al., 2011). However, the concept and functioning of romantic relationships may differ from country to country (Dion & Dion, 1996). For example, in collectivistic countries, relationships

are viewed as less voluntary, and more routine, than in individualistic countries (Adams, 2005), which may have consequences for people's relationship satisfaction. Moreover, the value assigned to specific aspects of romantic relationships may differ across cultures and shape the developmental pattern of relationship satisfaction. For example, although aspects such as intimacy and commitment are considered important in both China and the United States, passion is perceived as much more important by U.S. couples than by Chinese couples (Gao, 2001).

In the moderator analyses, we will also contrast effect sizes from nationally representative samples with effect sizes from other types of samples. Generally, representative samples allow for more valid conclusions compared to nonrepresentative samples. Thus, testing this moderator provides important information about the generalizability of the findings.

### **Gender**

A meta-analysis of gender differences in relationship satisfaction indicated that women are slightly less satisfied than men (Jackson et al., 2014). However, the moderator analyses revealed that this difference was due to including clinical samples, in which women were considerably less satisfied than men. Moreover, longitudinal studies yielded inconsistent findings on gender differences in trajectories of relationship satisfaction. Whereas some studies indicated more negative trajectories for men (e.g., Lavner & Bradbury, 2010), other studies did not find significant gender differences in the development of relationship satisfaction (e.g., Kurdek, 2005). Thus, it is crucial to consider gender as a moderator and to test whether development of relationship satisfaction differs between women and men.

### **Household Shared With Partner**

In modern societies, different living arrangements are acceptable. Specifically, the percentage of couples living in the same household before marriage has increased (Rosenfeld & Roesler, 2019), as has the percentage of married couples who live in separate households



(Reuschke, 2010). Whereas little is known about how a shared household relates to relationship satisfaction among unmarried couples, married couples who live together tend to be more satisfied than those who live apart (Diener et al., 2000). However, these findings were based on cross-sectional data. Thus, it is important to examine whether development of relationship satisfaction differs between couples who live together in the same household and those who live in separate households.

### **Marital Status**

Married couples might differ from other couples in significant ways. For example, couples who marry are often characterized by higher levels of satisfaction and commitment compared to couples who do not marry, which may lead to a more favorable development of relationship satisfaction (Yap et al., 2012). At the same time, when married couples are unhappy and suffer from relationship conflicts, they might encounter greater legal, financial, and social barriers to separation compared to nonmarried couples (Rusbult, 1980, 1983).

### **Presence of Children**

Parenthood is a significant developmental task in adulthood (Havighurst, 1972; Hutteman et al., 2014). A meta-analytic review on parenthood and relationship satisfaction suggested that parents are significantly less satisfied in their relationship than nonparents (Twenge et al., 2003). Thus, it is crucial to test whether development of relationship satisfaction differs between couples with children and those without children.

### **Relationship Transitions**

Relationship transitions, such as marriage and birth of a child, are of great importance for individuals and their relationships (e.g., Bramlett & Mosher, 2001; Morris & Carter, 1999; Rholes et al., 2001; van Scheppingen et al., 2018). Meta-analytic findings suggest that couples' relationship satisfaction declines across the transition to parenthood (Mitnick et al., 2009). Similarly, research indicates that relationship satisfaction decreases among newlywed couples (Bradbury & Karney, 2004; Mitnick et al., 2009; Vaillant & Vaillant, 1993). Thus, it

is important to consider the impact of relationship transitions on trajectories of relationship satisfaction. Moreover, in the analyses we will account for the temporal distance of the relationship transition (Denissen et al., 2019). Specifically, we will distinguish between samples in which the relationship transition occurred (a) *between* the assessments and (b) shortly *before* the first assessment.

### **Baseline Mean of Relationship Satisfaction**

Development of relationship satisfaction often depends on initial differences between relationships, such as the baseline mean in relationship satisfaction (e.g., Lavner & Bradbury, 2010). For example, in a study with married couples, those with lower baseline means showed a pronounced decrease in relationship satisfaction over the first 4 years of their marriage, while those with higher baseline means showed no or only small decreases (Lavner et al., 2012). In the present meta-analysis, we will test whether the baseline mean (i.e., mean at the first assessment) predicts change in relationship satisfaction.

### **Variability in Age and Relationship Duration**

Samples can differ in their mean age and mean relationship duration. Moreover, samples can differ in how homogeneous (vs. heterogeneous) they are with regard to age and relationship duration (see Orth et al., 2018). For instance, a sample with a mean age of 35 years could include participants ranging from 30 to 40 years (i.e., variability in age would be moderate). In contrast, another sample with the same mean age (i.e., 35 years) could include participants ranging from 20 to 50 years (i.e., variability in age would be large). Large within-sample variability of age could influence the findings because the observed developmental changes in relationship satisfaction would be mapped with relatively low precision on the mean age of the sample (see Orth et al., 2018). The same reasoning applies to within-sample variability of relationship duration. Therefore, we will test whether the degrees of variability in age and relationship duration (as indicated by the within-sample standard deviations of age and relationship duration) moderate the effect sizes.

**Time Lag**

Longitudinal studies on romantic relationships vary substantially in their temporal design. Specifically, some studies use shorter time lags between measurement occasions, such as 1 year (e.g., Fisher & McNulty, 2008), whereas other studies use much longer time lags, such as 10 years or more (e.g., LeBaron et al., 2014). Studies with shorter versus longer time lags may, however, differ in the samples recruited for these studies. Moreover, the data from longterm studies may reflect developmental patterns for relationships that are more stable over time and, likely, more satisfying for the relationship partners. However, in their recent review, Karney and Bradbury (2020) concluded that little is known about the optimal time lag to study development of romantic relationships.

**Dyadic Data**

Studies on romantic relationships either use dyadic data (i.e., both partners of each couple participate in the research) or nondyadic data (i.e., only one partner of each couple participates in the research). Research studies have suggested that findings based on dyadic data may differ systematically from findings based on nondyadic data. First, people who participate in a study together with their partner were more likely married or cohabitating, while people who did not participate with their partner more likely lived apart from their partner (Müller, 2017; Schröder et al., 2012). Second, people who participated with their partner were more strongly committed to their relationship and had lower levels of attachment insecurity (Barton et al., 2020). Third, however, one study found that people who participated with their partner were more likely to separate in the following years than people who participated without their partner (Park et al., 2020). In the present analyses, we will test whether the dyadic versus nondyadic nature of the data moderates development of relationship satisfaction.

**Measure of Relationship Satisfaction**

Across studies, relationship satisfaction is assessed with many different measures. Examples of established measures include the Dyadic Adjustment Scale (DAS; Spanier, 1976) and the Relationship Assessment Scale (RAS; Hendrick, 1988). In this meta-analysis, we will test the robustness of the findings in two ways. First, we will test the contrast between established measures and ad-hoc measures. Second, for the group of established measures, we will test the contrast between adjustment (e.g., DAS) and global satisfaction (e.g., RAS) measures, because research suggests that global satisfaction measures yield smaller estimates of change than adjustment measures (e.g., Eddy et al., 1991; Mitnick et al., 2009).

### **Relevance and Goals of the Present Meta-Analysis**

Research has not yet led to any agreement on the typical, normative trajectory of relationship satisfaction across the life span, and how this trajectory can be mapped on the time metrics of age and relationship duration. In fact, both the theoretical perspectives and the available empirical findings on development of relationship satisfaction are inconsistent. Therefore, the main goal of this meta-analysis was to synthesize the available evidence on the development of romantic relationship satisfaction and to examine the normative trajectory of relationship satisfaction as a function of age and relationship duration. To gain a comprehensive understanding of developmental patterns, we meta-analyzed cross-sectional and longitudinal information from primary studies. Specifically, cross-sectional data provided information about between-person differences in the *level* of relationship satisfaction as a function of age and relationship duration. Longitudinal data provided information about within-person *change* within a given relationship as a function of age and relationship duration. Moreover, given that sample and methodological characteristics may have influenced the findings of primary studies, we tested for moderators of development in relationship satisfaction. Specifically, we tested for the effects of birth cohort, sample type, country, ethnicity, gender, household shared with partner, marital status, presence of children, relationship transitions, baseline mean of relationship satisfaction, variability in age,

variability in relationship duration, time lag between assessments, dyadic data, and measure of relationship satisfaction.

### **Method**

This systematic review and meta-analysis used anonymized data and therefore was exempt from receiving approval by the Ethics Committee of the authors' institution ([blinded]), in accordance with national law. The flow diagram shown in Figure 3 summarizes the search for and selection of studies in the present research (Moher et al., 2009).

#### **Identification of Studies**

To find relevant studies, we searched for English-language journal articles, books, book chapters, and dissertations in the database PsycINFO. The following search terms were used: *relationship satisfaction, marital satisfaction, relationship quality, marital quality, dyadic adjustment, marital adjustment, and marital relations*. As noted above, in this meta-analysis we examined both cross-sectional and longitudinal information on relationship satisfaction. To ensure that the analyses of cross-sectional and longitudinal data were based on a comparable set of samples, we considered only studies that used a longitudinal design and hence provided both cross-sectional and longitudinal data. Therefore, we restricted our search to empirical-quantitative and longitudinal studies with non-clinical samples, by using the limitation options *empirical study, quantitative study, longitudinal study, and non-disordered population* in PsycINFO. The search was conducted on September 9, 2019, and yielded 1,207 potentially relevant articles, including 53 dissertations. One additional potentially relevant journal article was identified through other sources.

We included dissertations in the meta-analysis because dissertations are a category of “gray” literature and offer a promising method to address the issue of publication bias (Ferguson & Brannick, 2012; McLeod & Weisz, 2004). Specifically, dissertations are publicly available and indexed in databases. At the same time, they are less affected by publication bias because they are typically submitted to dissertation committees regardless of

the significance of their results (Ferguson & Brannick, 2012). Hence, to test for potential publication bias, effect sizes obtained from peer-reviewed journal articles can be contrasted with effect sizes obtained from dissertations.

### **Screening, Eligibility, and Inclusion of Studies**

To decide on the eligibility of studies, all studies were assessed in full text by the first or second author based on the inclusion criteria described below.<sup>1</sup> To obtain estimates on interrater agreement, a random sample of 60 studies were rated by both coders. Interrater agreement on inclusion versus exclusion of studies in the meta-analysis was high (i.e., 59 of 60 studies, resulting in  $\kappa = .92$ ). The diverging assessment was discussed until consensus was reached.

### ***Inclusion Criteria***

The raters followed standardized procedures to decide whether a study met the criteria for being included in the meta-analysis. The coding manual is available on the Open Science Framework (OSF; [https://osf.io/njumh/?view\\_only=0aeb50825faf43e09f6b50bbd6c99f5f](https://osf.io/njumh/?view_only=0aeb50825faf43e09f6b50bbd6c99f5f)).

Specifically, studies were included if all of the following twelve criteria were fulfilled: First, participants reported on a romantic relationship (i.e., non-romantic relationships, such as the parent-child relationship, were not of interest). Second, the study was empirical-quantitative. Third, the study used a longitudinal design (i.e., two or more assessments of the same sample). Fourth, the time lag between the assessments was 6 months or more. More precisely, for the meta-analysis we used data from the first two assessments that were separated by at least 6 months. These assessments are denoted as Time 1 and Time 2 in the remainder. Fifth, the sample did not, as a whole, experience separation or widowhood. Also, if the majority of participants reported on a new relationship at Time 2, this study was excluded. Therefore, samples included in this meta-analysis generally reported on the same

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<sup>1</sup> At the time of coding (i.e., October 2019 to February 2020), the qualifications of the raters were as follows: The first author had a PhD in psychology and the second author had a Master's degree in psychology.

relationship at Time 2. Sixth, the study did not include a clinical sample. Seventh, the study was not an intervention study. Eighth, relationship satisfaction was assessed by self-report. Ninth, the measure of relationship satisfaction was identical at Time 1 and Time 2. Tenth, the effect size was computable, that is, sufficient information was reported to compute the effect size. The minimal information needed to compute the effect size was the sample size at Time 1, the mean of age (or relationship duration) at Time 1, the means of relationship satisfaction at Times 1 and 2, the standard deviation of relationship satisfaction at Time 1, and the range of scale (i.e., the scale's minimum possible score and the scale's maximum possible score). Eleventh, the information on effect size data was consistent throughout the study. Twelfth, the study reported on an adult sample (i.e., sample mean age was 18 years or more).

### ***Final Data Set***

A total of 301 studies met the inclusion criteria. Of these, 67 studies could be included immediately because they provided sufficient information to compute the effect sizes. In the case of 83 studies, the sample was already included in the meta-analytic data set through another study which led to the exclusion of these studies (note that, when a sample was used in more than one study, we selected the study that provided information on the largest sample size or, if identical, the most comprehensive information on sample and effect size data). In the case of 151 studies that met the inclusion criteria except for providing information needed to compute the effect size, we contacted the authors of the study with a request for the missing information. This procedure led to the inclusion of 28 additional studies. In sum, the search procedures resulted in a total of 95 eligible studies, providing effect sizes for 165 independent samples.

### **Coding of Studies**

In a next step, these samples were coded by the first or second author. To obtain estimates on interrater agreement, a random sample of 40 studies were rated by both coders. Interrater agreement was high, with  $\kappa = 1.00$  for categorical variables (except for one variable,

see below) and  $r \geq .99$  for continuous variables. For sample type, interrater agreement was  $\kappa = .90$ . Inspecting the data revealed that there was one diverging assessment for this variable (specifically, one coding was “community sample,” whereas the other was “college/university students”). All diverging assessments were discussed until consensus was reached.

### *Coding Criteria*

The following data were coded: year of publication, publication type, sample size, sample type, country, ethnicity, proportion of female participants, sexual orientation of sample, proportion of participants living together with their partner in the same household, proportion of married participants, proportion of participants with children, occurrence of a relationship transition between Times 1 and 2, occurrence of a relationship transition shortly before Time 1, type of relationship transition, time lag between Times 1 and 2, dyadic nature of sample, measure of relationship satisfaction, range of scale, mean age of participants at Time 1, standard deviation of age at Time 1, mean relationship duration at Time 1, standard deviation of relationship duration at Time 1, year of Time 1 assessment, rank-order stability of relationship satisfaction between Times 1 and 2, means of relationship satisfaction at Times 1 and 2, and standard deviations of relationship satisfaction at Times 1 and 2.

If the sample was dyadic, we coded the data for female and male participants separately, which increased the power of moderator analyses testing for gender differences in the findings. In addition, in the case of subsamples experiencing a life transition in the romantic domain, subsamples were coded separately (e.g., parent sample and nonparent sample). In all other cases of subsamples (e.g., young adults and middle-aged adults), we coded the full sample.<sup>2</sup> To obtain estimates for the full sample, we used weighted means and pooled standard deviations. If information on year of Time 1 assessment was not reported, we estimated these data as follows: Year of Time 1 assessment = publication year – 3 years –

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<sup>2</sup> The only exception was one study, in which we coded Israeli and German couples separately because the time lag between assessments differed for the subsamples.



time lag between the first and last measurement occasion of the study (based on the assumption that studies are, on average, published 3 years after data collection has been completed; for a similar procedure, see Orth et al., 2018).

### ***Coding Relationship Duration***

Information on relationship duration was available for 52 samples and missing for 113 samples. However, relationship duration was a crucial variable in this meta-analysis (i.e., age and relationship duration were the two time metrics on which development of relationship satisfaction was mapped). Therefore, we used the following strategies to obtain more complete data on relationship duration. First, we contacted the authors of the studies with a request for the information. This resulted in data on relationship duration for additional 17 samples. Second, many studies provided information on proxies for relationship duration, that is, data on duration of living together (6 samples) and/or marriage duration (46 samples). We used these proxies of relationship duration and empirical data on how relationship duration, duration of living together, and marriage duration are related to estimate relationship duration in the sample. More precisely, nationally representative data are available for Germany (Schröder & Schmiedeberg, 2015; see also Heuveline & Timberlake, 2004): On average, people are in a relationship for 1.25 years before they move in together and they are in a relationship for 3.8 years before they marry. These estimates from Germany are consistent with data from the United States, indicating that people live together in a shared household for an average of 2.2 years before they marry (Kuperberg, 2014; for the United States, no information was available about the time between beginning a relationship and moving together, and beginning a relationship and marrying). We therefore used the estimates from Germany for merging the three duration variables. Specifically, if information on relationship duration was missing, but information on duration of living together was available, we estimated relationship duration by adding 1.25 years to the value of duration of living together. Similarly, if information on relationship duration was missing, but information on

marriage duration was available, we estimated relationship duration by adding 3.8 years to the value of marriage duration.<sup>3</sup> After using these procedures (i.e., requesting data from authors and using proxies of relationship duration), information on relationship duration was available for a total of 121 samples.

### Effect Size Measures

As noted above, to understand development of relationship satisfaction across the life span, we meta-analyzed information on both the *level* of relationship satisfaction (i.e., cross-sectional information on means at Time 1) and *change* in relationship satisfaction (i.e., longitudinal information on mean change between Time 1 and Time 2). Specifically, we used the following two effect size measures: As cross-sectional information, we used the mean percent-of-maximum-possible (POMP; Cohen et al., 1999) score of relationship satisfaction at Time 1 (denoted as  $POMP_{T1}$ ). As longitudinal information, we used the mean change in POMP scores per year (denoted as  $\Delta POMP_{year}$ ), which is an unstandardized measure of mean change.<sup>4</sup> By using these estimates, it was possible to examine how the mean level of relationship satisfaction developed as a function of age and relationship duration, respectively.

Given that the primary studies used many different measures of relationship satisfaction, the raw means of the measures were not comparable across studies. Therefore, we converted the raw means to POMP scores, so that the means were on the same scale

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<sup>3</sup> This procedure was based on estimates about the average time between beginning a relationship, moving in together, and marrying. Therefore, we conducted sensitivity analyses by using 2 and 6 years (instead of 1.25 and 3.8 years) as estimates of the average difference between relationship duration and duration of living together, and relationship duration and marriage duration, respectively. The mean of the relationship-duration variable used in the sensitivity analyses was 11.26 years ( $SD = 9.09$ , range = 0.26–48.14). The results of the sensitivity analyses are reported in Tables S1 and S2 and showed that the pattern of findings was very similar to the findings from the main analyses.

<sup>4</sup> In the Supplemental Material, we also report all analyses with standardized mean change per year ( $d_{year}$ ), see Section C (Tables S20–S26 and Figures S5–S6). The meta-analytic estimates of mean change in the metric of  $d$  values can be readily compared to findings on the development of other constructs, such as the Big Five personality traits, life satisfaction, and other individual characteristics.

(Cohen et al., 1999; see also Cerasoli, 2014). To obtain the mean POMP score at Time 1 ( $POMP_{T1}$ ), we used the formula given by Cohen et al. (1999)

$$POMP_{T1} = \frac{\text{observed} - \text{minimum}}{\text{maximum} - \text{minimum}} \times 100,$$

where *observed* is the observed Time 1 mean of relationship satisfaction, *minimum* is the scale's minimum possible score, and *maximum* is the scale's maximum possible score. For each mean, this procedure yielded a POMP score. This score reflected the Time 1 mean as percentage of the scale's maximum possible score and ranged from 0 to 100. The Time 2 POMP scores were computed correspondingly.

To obtain the effect size measure of mean change in POMP scores per year ( $\Delta POMP_{\text{year}}$ ), we calculated the unstandardized mean change based on POMP scores at Time 1 and Time 2. We computed this estimate with

$$\Delta POMP_{\text{year}} = (POMP_{T2} - POMP_{T1}) \times \frac{1}{\text{time lag}},$$

where  $POMP_{T2}$  is the Time 2 POMP score,  $POMP_{T1}$  is the Time 1 POMP score, and time lag is the lag (in years) between Time 1 and Time 2. Thus,  $\Delta POMP_{\text{year}}$  is a change-to-time ratio with the unit  $\Delta POMP$  per year, with positive values indicating an increase in relationship satisfaction and negative values indicating a decrease.

### **Meta-Analytic Procedure**

We conducted the meta-analytic computations with the metafor package (Viechtbauer, 2010) in R (R Development Core Team, 2020). Data and code are available on OSF ([https://osf.io/njumh/?view\\_only=0aeb50825faf43e09f6b50bbd6c99f5f](https://osf.io/njumh/?view_only=0aeb50825faf43e09f6b50bbd6c99f5f)). For the effect size analyses, we followed the recommendations by Borenstein et al. (2009) and Raudenbush

(2009). To estimate weighted mean effect sizes, we used random-effects models, and to test for moderators, we used mixed-effects meta-regression models. In all meta-analytic computations, between-study heterogeneity (i.e.,  $\tau^2$ ) was estimated with restricted maximum likelihood, as recommended by Viechtbauer (2005, 2010). Moreover, we used the Knapp and Hartung (2003) method for adjusting the standard errors (Viechtbauer, 2010).

In the meta-analytic computations, following Borenstein et al. (2009), study weights are given by

$$\omega_i = \left( \frac{1}{v_i + \tau^2} \right),$$

where  $\omega_i$  is the study weight for study  $i$ ,  $v_i$  is the within-study variance for study  $i$ , and  $\tau^2$  is the estimate of between-study heterogeneity (see above).

When using the mean POMP score at Time 1 as effect size, the within-study variance is given by

$$v_i = \frac{SD \text{ POMP T1}_i^2}{n_i},$$

where  $SD \text{ POMP T1}_i$  is the Time 1 standard deviation on the POMP scale in study  $i$ , and  $n_i$  is the sample size in study  $i$  (Borenstein et al., 2009). The POMP mean is a linear transformation of the original mean in the sample. Therefore, the POMP Time 1 standard deviation could be computed on the basis of the standard deviation of the original scale, following the general rule for computing the standard deviation of a linearly transformed variable (e.g., Cohen et al., 2003). Specifically, we computed the POMP standard deviation by dividing the original standard deviation by the difference between the scale's maximum possible score and the scale's minimum possible score and multiplying the result by 100.

When using mean change in POMP scores as effect size, the within-study variance is given by

$$v_i = \frac{SD_i^2}{n_i},$$

where  $n_i$  is the sample size in study  $i$  and  $SD_i$  is given by

$$SD_i = \sqrt{SD \text{ POMP T1}_i^2 + SD \text{ POMP T2}_i^2 - 2 \times r_i \times SD \text{ POMP T1}_i \times SD \text{ POMP T2}_i},$$

where  $SD \text{ POMP T1}_i$  and  $SD \text{ POMP T2}_i$  are the Time 1 and Time 2, respectively, standard deviations on the POMP scale in study  $i$ , and  $r_i$  is the correlation between the Time 1 and Time 2 scores in study  $i$ , (Borenstein et al., 2009). For those samples that reported the test-retest correlation of relationship satisfaction between Time 1 and Time 2 ( $k = 121$ ), we used this correlation coefficient for computing  $v_i$ . For the remaining samples ( $k = 44$ ), we used the mean correlation across studies (i.e., .59). To obtain the within-study variance for mean change in POMP scores per year, we followed the recommendation by W. Viechtbauer (personal communication, January 10, 2021) and divided the within-study variance by the squared time lag between Times 1 and 2.

For each effect size measure, we conducted preliminary analyses. That is, we searched for outliers by using the “influence” command included in the metafor package (Viechtbauer, 2010). When an effect size qualified as potential outlier, we repeated the meta-analytic computations without this sample for the purpose of sensitivity analyses. In addition, we tested for publication bias. We expected no publication bias for any of the effect size measures given that most of the included studies did not focus on mean level or mean change of relationship satisfaction per se. That is, most studies focused on other research questions,

but the statistics that were central for this meta-analysis (i.e., mean age, mean relationship duration, means and standard deviations of relationship satisfaction, range of scale) were reported somewhere in the articles. To test for publication bias, we used four methods.

First, we examined funnel plots, which depict the relation between the effect size and the standard error of the effect size (Light & Pillemer, 1984; Rothstein et al., 2005; Sterne & Egger, 2001; Sutton, 2009). Second, we used Egger's regression test to statistically test for asymmetry of the funnel plot (Egger et al., 1997). Third, we compared effect sizes from peer-reviewed journal articles with effect sizes from dissertations (as a category of gray literature). To compare these effect sizes, we used mixed-effects meta-regression models. Evidence for publication bias would be given if journal articles yielded effect sizes that differ significantly from effect sizes in dissertations. Fourth, we compared effect sizes that were published in the articles (i.e., as means and standard deviations of relationship satisfaction, mean age, and mean relationship duration) with effect sizes that were not published in the articles (but obtained from the study authors upon request). To compare these effect sizes, we used mixed-effects meta-regression models. Evidence for publication bias would be given if effect sizes that were published differed significantly from effect sizes that were not published.

## **Results**

### **Description of Studies**

The meta-analytic data set included 165 samples. Data were drawn from 89 journal articles and 6 dissertations. Table 1 provides an overview of the samples, including their basic sample characteristics, methodological characteristics, and effect sizes. The publication year of articles ranged from 2003 to 2019 (*Mdn* = 2013). Overall, the meta-analytic data set included 165,039 participants, and samples sizes ranged from 32 to 84,711 (*M* = 1,000, *SD* = 6,646, *Mdn* = 183). Of the samples, 10% were nationally representative samples, 88% were community samples, and 2% were samples of college students.

Almost all of the samples came from Western countries (95%), including the United States (54%), Canada (9%), the Netherlands (5%), Germany (5%), Italy (4%), Switzerland (4%), Israel (4%), the United Kingdom (4%), New Zealand (3%), Norway (2%), Australia (1%), Spain (1%), Finland (1%), and Turkey (1%). Only 3% were from Asian countries (i.e., China and Taiwan). Data from African and South American countries were not available. As regards ethnicity, 80% of the samples were predominantly White (with “predominantly” defined as at least 70% of the sample), 4% predominantly Asian, 3% predominantly Black, 3% predominantly Hispanic/Latin America, and 10% belonged to another ethnicity or were ethnically diverse. The mean proportion of female participants was 53% (range = 0% to 100%,  $SD = 47%$ ,  $Mdn = 65%$ ).

Mean age at Time 1 ranged from 20.80 years to 75.10 years with a mean of 34.81 years ( $SD = 10.24$ ). Mean relationship duration at Time 1 ranged from 0.26 to 46.20 years with a mean of 10.31 years ( $SD = 8.90$ ). Mean year of birth ranged from 1930 to 1991 ( $M = 1969$ ,  $SD = 12.33$ ), and year of Time 1 assessment ranged from 1980 to 2014 ( $M = 2003$ ,  $SD = 7.83$ ). The proportion of participants who lived in the same household as their partner ranged from 11% to 100% with a mean of 84%. The proportion of participants who were married ranged from 0% to 100% with a mean of 82%. The proportion of participants who had children ranged from 0% to 100% with a mean of 59%. With regard to relationship transitions, 16% of the samples experienced a relationship transition between Time 1 and Time 2. Of those, 15% married and 85% had a baby. In addition, 23% of the samples experienced a relationship transition shortly before Time 1. Of those, 76% married, 19% had a baby, and 5% experienced the loss of their child. The average time between the relationship transition and Time 1 was 0.46 years.

The time lag between assessments ranged from 6 months (which was the minimal lag required to be included in this meta-analysis) to 17 years, with a mean lag of 1.85 years and a standard deviation of 2.36 years. Eighty-two percent of the studies used an established

measure of relationship satisfaction and 18% an ad-hoc measure. Of those who used an established measure, 47% used a global satisfaction measure and 53% used an adjustment measure. More precisely, 19% used the DAS (Spanier, 1976) or an adaptation of it, 15% the Marital Adjustment Test (Locke & Wallace, 1959) or an adaptation of it, 13% the Quality of Marriage Index (Norton, 1983), and 10% the RAS (Hendrick, 1988). The remaining 43% used another measure, such as the Couples Satisfaction Index (Funk & Rogge, 2007) or the Kansas Marital Satisfaction Scale (Schumm et al., 1986).

### **Mean Level of Relationship Satisfaction at Time 1**

Across samples, the weighted mean POMP score of relationship satisfaction at Time 1 was 80.66, 95% CI [79.67, 81.65].

### ***Preliminary Analyses***

To identify influential outliers, we used the “influence” command in the metafor package (Viechtbauer, 2010). The results indicated that there was no sample that qualified as potential outlier. Thus, we used the complete data set in the remainder of the meta-analytic computations on mean level of relationship satisfaction.

To test for publication bias, we examined funnel graphs, used Egger’s regression test, compared effect sizes from journal articles and dissertations, and compared effect sizes that were published versus not published in the studies. The results indicated that the funnel plot had an asymmetric shape (Figure 4A), and that Egger’s regression test was significant (Table 2, left part). However, the comparison between effect sizes from journal articles and dissertations (Table 2, middle part) indicated no significant difference. Also, the comparison between effect sizes that were published versus not published (Table 2, right part) yielded no significant difference. Overall, our conclusion was that there was no evidence for systematic publication bias. In particular, the comparison of published versus unpublished effect sizes—which might be the most direct test of publication bias—was nonsignificant.

### ***Effect Size Analyses for Age***



Figure 5A provides an overview of the relation between effect size and mean age. The effect sizes indicated high mean levels of relationship satisfaction at Time 1. Moreover, the variability of effect sizes was larger in young adulthood than in later age periods.

To map mean levels of relationship satisfaction on age, we computed weighted mean effect sizes within age groups (for similar meta-analytic procedures, see Orth et al., 2021; Orth et al., 2018; Roberts et al., 2006). We constructed five age groups. For the age range from 20 to 50 years, the number of samples was large enough to construct groups with 10-year intervals each. For the age range from 50 to 76 years, the number of samples was lower, which led us to construct one age group from 50 to 65 years and one age group from 65 to 76 years. We decided to separate these two groups at age 65 years because this is the average age, across countries, at which people retire (Organisation for Economic Co-Operation and Development, n.d.), corresponding to the transition from middle adulthood to late adulthood.<sup>5</sup>

Table 3 reports the meta-analytic findings for the five age groups (see values in the upper half of the table). For reasons of completeness, the table also shows whether the mean effect sizes differed significantly from zero or not. However, we emphasize that null-hypothesis significance of the mean effect sizes was not a central information. Rather, in each age group we used the weighted mean effect sizes as best estimates of mean levels of relationship satisfaction at Time 1. As can be seen, the weighted mean effect sizes were relatively high, ranging from 77.61 to 83.61. The largest effect sizes emerged for the youngest (i.e., 20–30 years) and oldest (i.e., 65–76 years) age groups.

### ***Effect Size Analyses for Relationship Duration***

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<sup>5</sup> We conducted sensitivity analyses, in which we used narrower age brackets with intervals of 5 years, resulting in 10 age groups (note that no studies were available for the age group of 55–60 years). The results of the sensitivity analyses are reported in Tables S3 and S4 and showed that the pattern of findings was very similar to the findings reported in the main analyses.

Figure 6A provides an overview of the relation between effect size and mean relationship duration. The variability of effect sizes was much larger in relationships that had begun no more than 15 years before the first assessment. In relationships that had begun more than 15 years before the first assessment, the effect sizes indicated less variability and higher values.

To map mean levels of relationship satisfaction on relationship duration, we computed weighted mean effect sizes within relationship-duration groups. We constructed five groups across the observed range of relationship duration. For relationships that had begun less than 10 years before, the number of samples was large enough to construct two groups with 5-year intervals (0–5 and 5–10 years). For relationship duration of more than 10 years, the number of samples was lower. This led us to construct two relationship-duration groups with 10-year intervals (10–20 and 20–30 years). Finally, we constructed one group for relationship duration above 30 years (specifically, 30 to 46 years; 46 years was the maximum relationship duration in the meta-analytic data set).<sup>6</sup>

Table 3 reports the meta-analytic findings for the five groups of relationship duration (see values in the lower half of the table). For all groups, the weighted mean effect sizes were relatively high, ranging from 77.02 to 83.16. The largest effect sizes emerged for the group with relationships that had begun less than 5 years before the first assessment and for the group with relationships that had begun 20 to 30 years before the first assessment.

### **Mean Change of Relationship Satisfaction**

Across samples, the weighted mean effect size for mean change of relationship satisfaction was  $\Delta\text{POMP}_{\text{year}} = -1.688$ , 95% CI  $[-2.093, -1.283]$ .

### ***Preliminary Analyses***

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<sup>6</sup> We conducted sensitivity analyses, in which we used narrower relationship-duration brackets. Specifically, we used intervals of 5 years, resulting in 7 relationship-duration groups (note that no studies were available for the relationship-duration groups of 30–35 years and 35–40 years). The results of the sensitivity analyses are reported in Tables S5 and S6 and showed that the pattern of findings was very similar to the findings reported in the main analyses.

To identify influential outliers, we used the “influence” command in the metafor package (Viechtbauer, 2010). The results indicated that there were three samples that qualified as potential outliers (i.e., sample from Andres, 2014; male sample from Chong & Mickelson, 2016; female sample from Homish et al., 2009). To examine whether excluding these three samples would alter the conclusions from this meta-analysis, we conducted sensitivity analyses without these samples (Tables S7 and S8). When excluding the three samples, the results were very similar to the results in which the three samples were included. For this reason, we followed methodological recommendations advising against routine deletion of outliers (Viechtbauer & Cheung, 2010) and used the complete data set in the remainder of the meta-analytic computations.

To test for publication bias, we examined funnel graphs, used Egger’s regression test, compared effect sizes from journal articles and dissertations, and compared effect sizes that were published versus not published in the studies. The results indicated that the funnel plot had an asymmetric shape (Figure 4B), and that Egger’s regression test was significant (Table 2, left part). As the figure indicates, studies showing an increase in relationship satisfaction over time were underrepresented in the meta-analytic data set. However, the comparison between effect sizes from journal articles and dissertations (Table 2, middle part) and the comparison between effect sizes that were published versus not published (Table 2, right part) yielded no significant differences. Thus, we concluded that there was no consistent evidence for publication bias.

### ***Effect Size Analyses for Age***

Figure 5B provides an overview of the relation between effect size and mean age. The variability of effect sizes was much larger in young adulthood than in later age periods. In addition, the figure shows that the majority of effect sizes were negative in young adulthood, which indicates a decrease in relationship satisfaction in this life period. During middle and

late adulthood, effect sizes remained negative, but tended to increase and approach zero in later years.

To map mean change of relationship satisfaction on age, we computed weighted mean effect sizes within the five age groups. Table 4 reports the meta-analytic findings for the age groups (see values in the upper half of the table). For all groups, the weighted mean effect sizes were negative, suggesting a decrease in relationship satisfaction. The largest effect size emerged for the youngest age group (i.e., 20–30 years).

### ***Effect Size Analyses for Relationship Duration***

Figure 6B provides an overview of the relation between effect size and mean relationship duration. As the figure shows, the variability of effect sizes was much larger in relationships of shorter duration, that is, in relationships that had begun no more than 10 years before the first assessment. The figure also shows that the majority of effect sizes were negative during the first 10 years of a relationship. In relationships that had begun more than 10 years before the first assessment, the effect sizes were also negative, but tended to increase and approach zero.

To map mean change of relationship satisfaction on relationship duration, we computed weighted mean effect sizes within the five relationship-duration groups. Table 4 reports the meta-analytic findings for the five groups of relationship duration (see values in the lower half of the table). For all groups, the weighted mean effect sizes were negative. The largest effect sizes emerged for relationships that had begun less than 10 years before.

### **Trajectory of Relationship Satisfaction**

As explained in the Method section, we used the cross-sectional and longitudinal meta-analytic findings as the basis for drawing conclusions about normative development of relationship satisfaction as a function of age and relationship duration. To visualize the findings, we created graphs that combined the cross-sectional and longitudinal information, building on the type of graphs used in the context of aging-vector models (Duncan et al.,

2013; McArdle & Hamagami, 1992; Raudenbush, 2001). Figures 7 and 8 show the findings for the metric of age and relationship duration, respectively. The meta-analytic estimates of mean levels at Time 1, as reported in Table 3, are shown as dots, and are connected through a continuous line (i.e., representing the cross-sectional information). The meta-analytic estimates of mean change, as reported in Table 4, are shown as vectors starting at the dots (i.e., representing the longitudinal information per year). To enhance the clarity of the figures, only one vector is shown per age group or relationship-duration group. In fact, however, the vector applies to each year included in the same age or relationship-duration group. Overall, the design of the graphs allowed to plot a coherent trajectory across the observed range of age and relationship duration based on the cross-sectional information, while simultaneously including the longitudinal information.

It is important to note that conclusions about developmental changes on the basis of cross-sectional data require that there are no cohort effects (Baltes et al., 1979; Kasen et al., 2003; Mirowsky & Kim, 2007). Therefore, we tested whether mean year of birth predicted the mean level at Time 1 over and above the effects of age and relationship duration. The results showed that mean year of birth was neither significant in the analyses with age ( $B = -0.073$ ,  $SE = 0.062$ ,  $p = .240$ ) nor in the analyses with relationship duration ( $B = -0.076$ ,  $SE = 0.076$ ,  $p = .314$ ). This suggests that the cross-sectional findings were not confounded by cohort effects and strengthens the confidence in conclusions based on the mean levels.

### ***Trajectory as a Function of Age***

Figure 7 shows the findings on the development of relationship satisfaction as a function of age, for the observed range from 20 to 76 years. The cross-sectional information (represented by the dots) suggested that, on average, relationship satisfaction was highest at the beginning of young adulthood (the mean score was 83.61, indicating a high level of satisfaction). During young adulthood, relationship satisfaction decreased and reached a low point at age 40. Nevertheless, the mean score was 77.61, indicating that the absolute level of

satisfaction was still relatively high. After age 40, relationship satisfaction increased and reached a plateau in late adulthood. Differences in relationship satisfaction were largest during young adulthood, that is, from age 20 to 40 years. The difference between age 20 and 40 corresponded to 6.00 points. To improve the interpretation of differences in the POMP metric, we computed the mean standard deviation of the POMP scores at Time 1, which was 6.44. Thus, a change of about 6.5 points on the POMP scale roughly corresponds to a change by one standard deviation, similar to a standardized change of  $d = 1.00$ . Accordingly, the decrease from age 20 to 40 years corresponded to about 0.90 standard deviations, suggesting a large magnitude of difference.

At the same time, the longitudinal information included in Figure 7 (i.e., represented by the vectors) suggested much stronger declines compared with the cross-sectional information. However, as discussed in the Method section, there is reason to believe that the cross-sectional information provides—contrary to most research situations—more valid conclusions about normative change in relationship satisfaction as a function to age, compared with the longitudinal information. The reason is that the longitudinal information available from relationship studies (in particular when the sample includes both partners of couples) reflects change mostly within the same relationship. However, many individuals experience relationship break-ups and begin new relationships across the life span. Research suggests that in new relationships satisfaction starts again at a relatively high level, even if satisfaction had been low at the end of the previous relationship (Johnson & Neyer, 2019). Thus, the longitudinal information likely provides a too negative picture about the development of relationship satisfaction across age. Since there was no evidence of significant cohort effects, we believe that the cross-sectional information provides the most valid conclusions about the normative trajectory of relationship satisfaction as a function of age.

### ***Trajectory as a Function of Relationship Duration***

Figure 8 shows the findings on the development of relationship satisfaction as a function of relationship duration, for the observed range from 3 months to 46 years after beginning the relationship. The cross-sectional information (represented by the dots) suggested that, on average, relationship satisfaction was high at the beginning of a relationship (the mean score was 83.16, indicating a high level of satisfaction). During the following years, relationship satisfaction decreased and reached a low point at a relationship duration of 10 years. Nevertheless, the mean score was 77.02, indicating that the absolute level of satisfaction was still relatively high. After 10 years of relationship duration, relationship satisfaction increased, but decreased again after 20 years of relationship duration. The decrease during the first 10 years of a relationship corresponded to 6.14 points. The increase during the next 10 years corresponded to 5.97 points. As noted above, a change of about 6.5 points on the POMP scale corresponds to one standard deviation. Accordingly, the decrease during the first decade was about 0.95 standard deviations and the increase during the second decade was about 0.90 standard deviations, suggesting large magnitudes of change.

Again, the longitudinal information included in Figure 8 (i.e., represented by the vectors) suggested stronger declines compared with the cross-sectional information. As noted above, both the cross-sectional and longitudinal data provide important information. The reason is that couples who participate in a study and who separate some time later (e.g., a few months or years later) typically show stronger declines in relationship satisfaction. Couples who stay together for a longer time, however, do not show declines or only minor declines (e.g., Johnson & Neyer, 2019; Lavner & Bradbury, 2010). This finding has consequences for the interpretation of the cross-sectional data. When the mean relationship duration in a sample is short at Time 1, the sample likely includes a larger proportion of relationships that end sometime soon. However, when the mean relationship duration is long at Time 1 (e.g., 20 years), the sample likely includes a positive selection of relationships (in terms of functioning

and satisfaction). The reason is that many of the less well functioning and unsatisfying relationships did not “survive” the first 20 years. At the same time, there is reason to believe that the longitudinal data provide a negatively biased picture of relationship satisfaction as a function of relationship duration, because the samples typically included a number of couples that separated a few months or years later. Thus, if the goal is to track the development of relationship satisfaction among couples who stay together for longer times, the longitudinal data likely overestimate the magnitude of the decline across relationship duration. Consequently, the longitudinal data on mean change cannot be used to construct a coherent trajectory that reflects how relationship satisfaction develops across decades of a relationship.

In sum, the longitudinal data reflect how relationship satisfaction changes in the average sample at a given time after beginning a relationship. The cross-sectional data, however, reflect in a more valid way how relationship satisfaction develops in couples who stay together for longer times. Again, there was no evidence of significant cohort effects, which strengthens confidence in the conclusions based on the cross-sectional information.

### **Disentangling Age and Relationship Duration**

Age and relationship duration were highly correlated with each other (see Table S9). Therefore, we conducted mixed-effects meta-regression analyses to disentangle the effects of the two time metrics on development of relationship satisfaction. In these analyses, we predicted the mean level of relationship satisfaction, using age and relationship duration as continuous variables. Specifically, we computed six models that differed with regard to the predictors included. Model 1 tested the linear effect of age, Model 2 the linear effect of relationship duration, Model 3 the linear effects of age and relationship duration, Model 4 the linear and quadratic effects of age, Model 5 the linear and quadratic effects of relationship duration, and Model 6 the linear and quadratic effects of both age and relationship duration.

The findings are reported in Table 5 and suggested the following conclusions. When age and relationship duration are examined separately, the meta-regression models support the



conclusion that relationship satisfaction changes in a curvilinear (i.e., U-shaped) way. More precisely, the quadratic effects were significant in Model 4 (age) and Model 5 (relationship duration).<sup>7</sup> When age and relationship duration were examined simultaneously, the meta-regression models suggested that age is the dominant time metric in the prediction of mean levels of relationship satisfaction, regardless of whether only linear effects are tested (Model 3) or whether quadratic effects are included (Model 6). More precisely, relationship duration did not show any linear or quadratic effect on relationship satisfaction, over and above the effects of age.

Overall, these findings showed that the trajectories obtained from the mixed-effects meta-regression models (in which age and relationship duration were examined as continuous variables) were relatively similar to the trajectories obtained from the weighted mean effect size analyses (which used age groups and relationship-duration groups). Specifically, for age, the results of the meta-regression models replicated the pattern of findings from the analyses with groups quite closely. For relationship duration, the results were also relatively similar, but with the meta-regression approach it was not possible to capture the more complex trajectory suggested by the analyses with groups. The reason is that the number of samples included in the meta-analytic dataset would be too low for testing a more complex pattern, such as a cubic model. In particular, the number of samples was relatively low above 50 years of age and 20 years of relationship duration, which limits the power of testing more complex curvilinear functions. Nevertheless, the meta-regression models are useful because they allow testing, with a different approach, the developmental patterns as a function of age and relationship duration. Moreover, the results from the meta-regression models helped to disentangle the effect of age and relationship duration, suggesting that age, rather than

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<sup>7</sup> For exploratory reasons, we plotted the trajectories implied by Models 4 and 5 (Figures S1 and S2). For age, the trajectory corresponded quite closely to the trajectory suggested by the analyses with age groups. For relationship duration, the trajectory captured some, but not all, of the curvature suggested by the analyses with relationship-duration groups.

relationship duration, is the more dominant time metric in the development of relationship satisfaction.

We conducted a second set of analyses to disentangle the effects of the two time metrics. In these analyses, we examined the effect of one time metric (e.g., age) while constraining the samples in the other time metric (e.g., relationship duration). We subgrouped the samples in the meta-analytic data set in a stepwise manner based on both time metrics. For example, we created the subgroup of samples with a relationship duration of less than 10 years. Within this subgroup, we further created subgroups based on their age. Specifically, we created one group with participants aged 20–30 years ( $k = 42$ ) and one group with participants aged 30–40 years ( $k = 32$ ; for relationship duration of less than 10 years, no samples above age 40 were available). We then compared the mean levels at Time 1 between these two age groups (thus, both groups had approximately the same relationship duration). Likewise, we applied this approach to compare the mean levels at Time 1 between groups that differed in relationship duration but had approximately the same age.

Table 6 shows that the comparisons between age groups were significant in relationships of shorter duration (i.e., below 10 years) and longer duration (i.e., above 25 years). This finding suggests that people had lower relationship satisfaction the older they were. In relationships of medium duration (i.e., between 10 and 25 years), the comparison between age groups was not significant. Table 7 shows that none of the comparisons between relationship-duration groups were significant. This indicates that—when age is constrained—relationship satisfaction did not differ depending on people’s relationship duration. Again, these findings support the assumption that age, rather than relationship duration, is the more dominant time metric in the development of relationship satisfaction.

### **Moderator Analyses**

Given that the heterogeneity statistics indicated that the effect sizes varied significantly, we tested for moderators of the effect sizes. For the categorical variables, we

focused on specific contrasts, because the number of samples in some of the categories were low. More precisely, for sample type, we contrasted nationally representative samples (10%) with community and college samples (90%). We used representative samples in this contrast, despite their relatively low number, because representative samples provide more valid results compared with other samples. For country, we contrasted samples that came from the United States (54%) with other samples (46%). For ethnicity, we contrasted samples that were White/Caucasian (80%) with other samples (20%). In addition, we contrasted samples that had (16%) versus had not (84%) experienced a relationship transition between Times 1 and 2. For samples that experienced a relationship transition, we contrasted marrying (15%) with having a baby (85%). Also, we contrasted samples that had (23%) versus had not (77%) experienced a relationship transition shortly before Time 1. Again, we contrasted samples that married (81%) with samples that had a baby or adopted a child (19%).<sup>8</sup>

Moreover, we included four methodological characteristics in the moderator analyses: time lag between assessments, dyadic data, and two contrasts for measure of relationship satisfaction. Specifically, we contrasted samples that included dyadic (81%) versus nondyadic data (19%).<sup>9</sup> We also contrasted samples that were assessed with an established scale (83%) versus an ad-hoc measure (17%). Moreover, for those samples that were assessed with an established scale, we contrasted global satisfaction scales (46%) with adjustment scales (54%). Table S9 shows the zero-order correlations between age, relationship duration, sample characteristics, methodological characteristics, and the effect sizes.

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<sup>8</sup> There was one study (including two samples) that assessed participants after the loss of their child. The very low number of samples would not have allowed for reliable conclusions about this sample characteristic. Therefore, we did not use a contrast specific to this transition.

<sup>9</sup> In addition to testing dyadic data as moderator, we conducted the effect size analyses separately for nondyadic samples ( $k = 31$ ) and dyadic samples ( $k = 134$ ). Furthermore, as reported above, for the dyadic samples we had coded the data separately for female and male subsamples. Therefore, we repeated the effect size analyses within the set of dyadic subsamples. We randomly assigned the dyadic samples into the group of “dyadic subsample A” and “dyadic subsample B” to make sure that not all female subsamples were in one group, while all male subsamples were in the other group. The findings are reported in Table S10 and suggest that the type of data did not alter the conclusions drawn from this meta-analysis.

In the moderator analyses, it was essential to control for between-sample differences in mean age. As reported above, effect sizes varied as a function of age. This finding is also reflected in the correlations between age and effect sizes (see Table S9). Thus, if age were not controlled for, any observed effects of moderators could result from confounding with age. To avoid issues of multicollinearity in the moderator analyses, we controlled only for mean age but not for mean relationship duration (i.e., relationship duration was strongly correlated with age; Table S9).<sup>10</sup>

Because of the many tests included in the moderator analyses (i.e., 18 tests for the mean score at Time 1 and 19 tests for mean change), we adjusted the significance level to  $p < .003$ , following the Bonferroni method (i.e., dividing .05 by 19). In the first step of the analyses, we tested each moderator separately, controlling for mean age of the sample. In the second step, we tested any significant moderators simultaneously, again controlling for age, to examine whether they had unique effects.

The findings of the moderator analyses are provided in Table 8. As for mean level of relationship satisfaction at Time 1 ( $POMP_{T1}$ ), presence of children and use of a global measure showed significant moderator effects (Table 8, left part). Specifically, a greater proportion of participants with children predicted a lower mean level of relationship satisfaction at Time 1. Moreover, the assessment of relationship satisfaction with a global satisfaction scale (vs. an adjustment scale) predicted a higher mean level of relationship satisfaction at Time 1. Testing the two significant moderators simultaneously showed that the coefficients were very similar to the coefficients from the first step of the analyses.<sup>11</sup>

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<sup>10</sup> We tested whether the correlation between age and effect size differed significantly from the correlation between relationship duration and effect size, for  $POMP_{T1}$  and  $\Delta POMP_{year}$ . The tests were conducted with the subset of samples that provided information on both time metrics, that is, age and relationship duration ( $k = 117$ ). The correlation between age and  $POMP_{T1}$  ( $r = -.19$ ) did not significantly differ from the correlation between relationship duration and  $POMP_{T1}$  ( $r = -.14$ ),  $t = -1.95$ ,  $p = .054$ . Similarly, the correlation between age and  $\Delta POMP_{year}$  ( $r = .25$ ) did not significantly differ from the correlation between relationship duration and  $\Delta POMP_{year}$  ( $r = .21$ ),  $t = 1.57$ ,  $p = .119$ .

<sup>11</sup> The findings indicated that the presence of children had a negative effect ( $B = -6.397$ ,  $SE = 1.706$ ,  $p < .001$ ) and the use of a global satisfaction measure had a positive effect ( $B = 4.640$ ,  $SE = 1.188$ ,  $p < .001$ ) on the effect sizes.

As for mean change in relationship satisfaction ( $\Delta\text{POMP}_{\text{year}}$ ), the findings indicated that none of the sample or methodological characteristics had a significant moderator effect on the effect sizes (Table 8, right part). However, time lag between assessments indicated a tentative moderator effect (i.e., a longer time lag predicted a smaller decline in relationship satisfaction), but the  $p$  value (.013) did not meet the Bonferroni-adjusted significance level.

In sum, two characteristics had significant moderator effects: The proportion of participants with children and the use of a global satisfaction scale explained variance in the mean level of relationship satisfaction at Time 1. Yet, a central conclusion from the moderator analyses is that the effect sizes were fairly robust across the moderators tested, which strengthens confidence in the pattern of findings.<sup>12,13</sup>

## Discussion

The goal of this research was to gain a precise and robust picture of the normative development of relationship satisfaction across the life span, as a function of age and as a function of relationship duration. To that aim, the available evidence on development of relationship satisfaction was synthesized. The meta-analytic data set included 165 independent samples with a total of 165,039 participants. The analyses were based on two effect size measures: mean level of relationship satisfaction at Time 1 and mean change in

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<sup>12</sup> In addition to testing proportion of female participants as moderator of the effect sizes, we conducted separate effect size analyses for female ( $k = 75$ ) and male ( $k = 69$ ) samples. The findings are reported in Tables S11–S16. The trajectories for women and men are visualized in Figure S3 for age and Figure S4 for relationship duration. As regards the time metric of relationship duration, women and men had relatively similar trajectories, and these trajectories corresponded well with the trajectories in the full meta-analytic dataset (Figure 8). As regards age, however, women and men showed slightly different trajectories: Men tended to have higher mean levels in young adulthood, lower mean levels in middle adulthood, and higher mean levels in late adulthood compared to women. Thus, relationship satisfaction showed a dynamic pattern of ups and downs across age for men, while it showed a more even pattern for women (at least after age 30 years). Finally, the moderators that had a significant effect on  $\text{POMP}_{\text{T1}}$  in the full meta-analytic dataset (i.e., presence of children and global satisfaction measure) showed similar effects in the female and male samples. However, only in male samples the effect of global satisfaction measure on  $\text{POMP}_{\text{T1}}$  was significant on the Bonferroni-adjusted significance level.

<sup>13</sup> In addition to testing variability in age and variability in relationship duration as moderators on the effect sizes, we conducted sensitivity analyses. In these analyses, we limited the meta-analytic dataset to samples in which the participants showed relatively little variability with regard to age and relationship duration. The findings are reported in the Supplemental Material, see Section B (pp. 27–28 and Tables S17–S19). Both tables indicate that the pattern of findings in the sensitivity analyses was very similar to the main analyses. Overall, these results suggested that constraining samples in their within-sample variability in age or relationship duration did not alter the conclusions drawn from the main analyses.

relationship satisfaction per year. While the mean levels informed about normative development across the life span (or over the course of a relationship), the mean changes informed about yearly change in the average sample at a given time in the life course (or after beginning a relationship). The mean age associated with the effect sizes ranged from 20 to 76 years, and the mean relationship duration from 3 months to 46 years.

Overall, relationship satisfaction developed systematically as a function of age and relationship duration. Specifically, for the metric of age, the findings on mean levels suggested that relationship satisfaction decreased from age 20 to 40, reached a low point at age 40, then increased until age 65, and reached a plateau in late adulthood. The findings on mean change indicated that relationship satisfaction decreased within a given relationship, with the most pronounced decline in young adulthood. For the metric of relationship duration, the findings on mean levels suggested that relationship satisfaction decreased during the first 10 years of a relationship, reached a low point at 10 years, increased until 20 years, and then decreased again. The findings on mean change indicated that relationship satisfaction decreased within a given relationship, with the most pronounced decline in the first years of a relationship. The moderator analyses suggested that the pattern of findings was robust across most sample and methodological characteristics, with two exceptions: A higher proportion of participants with children predicted a lower mean level of relationship satisfaction, and the use of a global satisfaction measure predicted a higher mean level of relationship satisfaction.

### **Development of Relationship Satisfaction as a Function of Age**

As noted above, the present meta-analytic findings suggested that relationship satisfaction decreases in young adulthood, reaches a low point at age 40, then increases in middle adulthood, and reaches a plateau in late adulthood. Yearly change in relationship satisfaction at a given time in the life course was negative, with the largest decline in young adulthood. Due to a smaller number of samples above age 50 years, the findings for middle and late adulthood should be interpreted with more caution. As reviewed in the Introduction,

the literature allowed to derive a number of different hypotheses about how relationship satisfaction develops as a function of age. In the following, we discuss the present findings against the background of these hypotheses.

### *Young Adulthood*

Neo-socioanalytic theory (e.g., Roberts & Wood, 2006) and developmental task theory (e.g., Havighurst, 1972) suggested that relationship satisfaction increases in young adulthood (i.e., age 20 to 40 years). In contrast, socioemotional selectivity theory (Carstensen et al., 1999) suggested stability in this age period, and the perspective of life-satisfaction research (e.g., Blanchflower & Oswald, 2008) suggested a decline. The meta-analytic findings clearly supported the decline hypothesis, regardless of whether the analyses were based on cross-sectional or longitudinal information. At least two mechanisms could be responsible for this decline.

First, young adulthood is a life stage that is characterized by the search for niches that fit the individual's personality and competences (Havighurst, 1972) and exploration of different life paths (Arnett, 2000; Shulman & Connolly, 2013). Young adults often find themselves in the *rush hour* of life (Bittman & Wajcman, 2000), in which they are forced to invest into many different domains of life. The simultaneous demands often reduce the cognitive and time resources that can be invested in each life domain, including the romantic relationship domain. Reduced investment, in turn, can make the romantic relationship less satisfying (e.g., Rusbult, 1980).

Second, young adults often engage in on-and-off relationships and serial relationships (Dailey, 2019) and show a delay in longterm commitment (Shulman & Connolly, 2013). At the same time, particularly the most recent generations of young adults have high expectations of their romantic relationships and hope to have diverse needs fulfilled by a romantic partner (e.g., Bühler & Nikitin, 2020; Finkel et al., 2014; Inglehart, 2007; Rogler, 2002). Therefore,

the actual romantic relationship may fall short of the expectations of many young adults, which may lead to a decrease in relationship satisfaction in young adulthood.

### ***Middle Adulthood***

For middle adulthood (i.e., age 40 to 65 years), the available theoretical perspectives again led to conflicting hypotheses. Whereas neo-socioanalytic theory and socioemotional selectivity theory suggested an increase in relationship satisfaction, developmental task theory and the perspective of life-satisfaction research suggested that average levels of relationship satisfaction are stable or decline slightly. The meta-analytic findings on mean levels indicated a low point of relationship satisfaction at age 40, followed by an increase. The findings on mean change showed slight decreases within a given relationship in middle adulthood. As noted above, since there was no evidence of significant cohort effects, we believe that the cross-sectional information provides the most valid conclusions about the normative trajectory of relationship satisfaction as a function of age.

As regards the low point of relationship satisfaction, the period from age 40 to 50 years is often discussed as the time of midlife crisis (Freund & Ritter, 2009; Levinson et al., 1976). Specifically, in this developmental stage adults consolidate and coordinate many aspects of their life simultaneously (e.g., family and work; Havighurst, 1972). They take responsibility for the younger as well as for the older generation (e.g., Freund & Nikitin, 2012) and more strongly perceive their future time as limited (e.g., Carstensen et al., 1999; Neugarten, 1968). These challenges might lower the resources available to the individual. Therefore, the mechanisms that have been discussed to explain why life satisfaction might be low in midlife—for example, spending more time with work and less time with leisure activities (e.g., Hudson et al., 2019)—might also be responsible for the low point in relationship satisfaction. In addition, in middle adulthood women usually enter menopause (Gersh & Lavie, 2020), which involves major physiological changes. A depletion of resources, in turn, may lower the ability and motivation to invest in the relationship (Buck &



Neff, 2012; Finkel & Campbell, 2001; Finkel et al., 2012; Finkel et al., 2014). Hence, this mixture of greater challenges and fewer psychological resources may contribute to the low point in middle adulthood. Moreover, in this life stage people often perform a personal audit of their lives, adding up what they were able to accomplish and subtracting the dreams that could not be realized. This process operates also in the relationship domain: Realizing that important dreams did not become true in the relationship might lead to disillusion and disappointment (Levinson et al., 1976) and may significantly reduce satisfaction with the romantic relationship.

As regards the moderate increase in relationship satisfaction during middle adulthood, there are at least four reasons that could explain this development. First, according to social exchange theory (Levinger, 1976, 1979) and the investment model (Rusbult, 1980, 1983), people tend to evaluate their current romantic relationship against the background of potential alternatives. In the life stage of middle adulthood, people may perceive their alternatives as shrinking, which, in turn, might be beneficial for the evaluation of their current relationship. Second, in this life stage adult children typically leave their parents' home and parents find themselves at the *empty-nest stage* (e.g., Harkins, 1978; Raup & Myers, 1989). This transition implies changes, challenges, and opportunities for the couple (e.g., Bouchard & McNair, 2016; King & Theiss, 2016; Umberson et al., 2010; White & Edwards, 1990). It is possible that those couples who successfully deal with the empty nest may benefit from the increasing availability of time for couple activities and, consequently, become more satisfied with their relationship. Third, it is possible that a larger percentage of people between 40 and 65 years reported on their second marriage. In fact, in the United States, the median age at which women and men remarry is 43 and 46 years, respectively (Schweizer, 2019). Therefore, those who coped well with a potential midlife-life crisis, including divorce and remarriage, might be the more satisfied in this life stage. In other words, successfully managing divorce and remarriage could be partially responsible for the increase in relationship satisfaction during

midlife. Fourth, in this life stage people begin to shift their focus towards positive experiences and emotions (e.g., Charles et al., 2003; Kennedy et al., 2004; Mather & Carstensen, 2003; Mikels et al., 2005). This developmental pattern might lead middle-aged couple members to more strongly focus on the positive sides of their romantic relationship and to evaluate their day-to-day relationship life more favorably. These tendencies might reduce the negative influence of minor conflicts, which might contribute to a more favorable evaluation of the relationship.

### ***Late Adulthood***

For late adulthood (i.e., age 65 years and older), theoretical perspectives again led to conflicting hypotheses. Whereas neo-socioanalytic theory suggested a decrease in relationship satisfaction, socioemotional selectivity theory, developmental task theory, and the perspective of life-satisfaction research suggested an increase. The present findings on age differences in the mean level indicated that relationship satisfaction reached a plateau in late adulthood on a relatively high level. The findings on mean change suggested a slight decline in a given relationship in late adulthood. Overall, the findings suggest a relatively positive development of relationship satisfaction in late adulthood.

Possible reasons for explaining this pattern of findings are as follows. On average, older adults show decreases in adaptive personality traits such as emotional stability, conscientiousness, and self-esteem (Lucas & Donnellan, 2011; Orth et al., 2018; Specht et al., 2011). Emotional instability, low conscientiousness, and low self-esteem, in turn, may contribute to less positive relationship experiences (e.g., Donnellan et al., 2007; Dyrenforth et al., 2010; Finn et al., 2013; Karney & Bradbury, 1997; Orth, 2013; Vater & Schröder-Abé, 2015). At the same time, older adults experience more losses than young or middle-aged adults, with regard to health and friendships (Roberts & Wood, 2006; Roberts et al., 2008). As a consequence, they may especially appreciate social relationships that are still intact, such as their romantic relationship (e.g., Sander et al., 2017; Wrzus et al., 2013). Moreover, death-

related issues become more salient in late adulthood, such as through mourning over peers (Baltes & Mayer, 1999; Wagner et al., 2013) and experiencing one's time as limited (e.g., Carstensen et al., 1999; Neugarten, 1968). This salience might put daily conflicts into perspective and might contribute to a more favorable evaluation of the relationship. Also, older adults' tendency to show more wisdom and gentleness might lead to a more positive evaluation of the relationship (e.g., Havighurst, 1972).

### **Development of Relationship Satisfaction as a Function of Relationship Duration**

For relationship duration—i.e., the second time metric examined in this research—the meta-analytic findings on mean *level* suggested that relationship satisfaction decreased during the first 10 years of the relationship. Afterwards, relationship satisfaction increased until a relationship duration of 20 years and then decreased again. However, there is reason to believe that the observed increase from 10 to 20 years of relationship duration might partially, or even fully, result from selective break-ups of couples over time. This means that the more unsatisfied couples may have separated after 10 years of relationship duration, while the more satisfied couples stayed together. This interpretation is supported by the findings on mean *change* in relationship satisfaction, which showed that the yearly decline over the course of a relationship was largest in relationships with a duration of less than 10 years. Later, after 10 or even 20 years of a relationship, the average yearly change was much smaller. Thus, the “surviving” couples (i.e., couples who stay together over decades) may have been happy with their relationship all along, but their relative influence on estimates of mean relationship satisfaction in samples becomes stronger with increasing relationship duration. The reason is that many of the less happy relationships are not part of studies that focus on couples with long relationship duration (e.g., 20 years) because the less happy relationships have often already ended in the first or second decade of the relationship. At the same time, the longitudinal data on mean change likely provide a negatively biased picture of relationship satisfaction as a function of relationship duration, precisely because the samples typically

included a number of couples that separated a few months or years later. Thus, the data on mean change reflect how relationship satisfaction changes in the average couple at a given time after beginning the relationship. The data on mean level, however, better reflect how relationship satisfaction develops in couples who have made it to a given point in time in the relationship.

### ***Potential Reasons for Declining Relationship Satisfaction***

In the following, we discuss seven facets of romantic relationships that may explain why relationship satisfaction often shows declines, in particular in the first 10 years of a relationship.

A first important facet is *couple interaction and communication*. Prevention programs (Markman et al., 1994) and couple therapies (Epstein & Baucom, 2002; Jacobson, 2013) frequently focus on interaction and communication to improve the quality of romantic relationships (for an overview, see Karney & Bradbury, 2020). Specifically, over the course of the relationship, couples inevitably face challenges. The management of these challenges—which is reflected in the way partners interact and communicate with each other—is important for the development of the relationship (Falconier et al., 2015; Joel et al., 2020; Johnson & Bradbury, 2015; Rusbult & Buunk, 1993). At the beginning of the relationship, couples tend to invest time and energy in communicating effectively and in managing conflicts (Sillars & Wilmot, 1989). Over the course of the relationship, however, relationship maintenance behaviors such as positive interactions and open communication usually decline, with a slight rebound in longterm relationships (Weigel & Ballard-Reisch, 1999). Hence, it is likely that maladaptive interaction and communication patterns contribute to a decline in relationship satisfaction over time.

A second facet is the *experience of intimacy*. According to the intimacy process model (Reis et al., 1988), constructive interaction and communication patterns help creating intimacy between partners, which implies feeling understood, cared for, and validated by the

partner. If, however, couple interaction and communication are less effective, feelings of intimacy are also reduced. This may further contribute to a decline in relationship satisfaction.

A third facet is the *time spent together*. Couples who actively spend time together at least once a week (e.g., by talking to each other or sharing an activity) are more satisfied with their relationship than couples who spend less time together (e.g., Anderson et al., 2010; Wilcox & Dew, 2012; Zuo, 1992). However, over the course of a relationship, the time spent together often declines (e.g., because of higher stress levels due to work).

A fourth facet is *sexuality*. Over the course of the relationship, sexual desire usually decreases, and romantic partners engage in sexual activities less often. Sexual frequency and sexual satisfaction tend to peak in the first year and then decline (Call et al., 1995; Schröder & Schmiedeberg, 2015). The decline in sexual activity has been explained by the psychological and physiological habituation that people develop to a repeated stimulus, such as a longterm partner (VanLaningham et al., 2001). Frequent sexual activity, however, can act as a buffer against problematic relationship aspects, such as poor communication tendencies (Litzinger & Gordon, 2005). Thus, declining sexual activity over the course of the relationship may contribute to declining satisfaction with the relationship.

A fifth facet is *passion*. While partners may experience an increase in their levels of intimacy and commitment in a satisfying relationship, they often show a decrease in their level of passion (e.g., Garcia, 1998). Although some people report that their passion remains constant over time (Frederick et al., 2017), the majority of people experience a decline (e.g., Beck, 1995; Brewis & Meyer, 2005; Clement, 2002; Levine, 2003).

A sixth facet is *need fulfillment* (Knee et al., 2013; La Guardia & Patrick, 2008). Given the diversity of needs that partners seek to satisfy in a relationship, such as the need for love and emotional security, it is unlikely that all needs can be fulfilled in one relationship (e.g., Finkel et al., 2014). At times, these needs may even be incompatible (e.g., Finkel et al., 2014; Norona et al., 2017). Thus, extensive needs of one or both of the partners may represent

a constant challenge to the romantic relationship, potentially contributing to a decline in relationship satisfaction over time.

A seventh facet are people's *relationship ideals*. Individuals who believe that their partner must be ideal in all ways become less satisfied over time (Frye & Karney, 2002; Karney & Frye, 2002; Sprecher & Metts, 1999). Unmet conceptions may be particularly challenging for couples facing problematic relationship characteristics, such as poor communication styles (Attridge & Berscheid, 1994; Kurdek, 1991; McNulty & Karney, 2004). Thus, unmet relationship ideals may contribute to a decline in satisfaction over the course of the relationship.

In sum, a large number of factors may be responsible for declines of relationship satisfaction over the course of a relationship. These factors include behavioral (i.e., interaction and communication, time spent together, sexual activity), affective (i.e., intimacy, passion), motivational (i.e., need fulfillment), and cognitive (i.e., relationship ideals) aspects.

### ***A 10-Year Itch***

As discussed above, the findings suggest that relationship satisfaction declines over the first 10 years of the average relationship and that, afterwards, average levels of relationship satisfaction begin to increase. Thus, the findings raise the question of why there is a significant change at about 10 years, alluding to the theme of the 7-year itch (e.g., Diekmann & Mitter, 1984; Kulu, 2014; Kurdek, 1998, 1999). The hypothesis of the 7-year itch is that relationship break-ups—or, at least, serious relationship problems—are most likely after 7 years of marriage (e.g., Bramlett & Mosher, 2001; Kulu, 2014). Interestingly, 7 years of marriage correspond relatively closely to 10 years of relationship duration, given that spouses are together, on average, for about 3 to 4 years before marriage (see the information provided in the Method section; Schröder & Schmiedeberg, 2015). Thus, separation and divorce likely peak at about 10 years after the beginning of a relationship, which could contribute to the explanation of why couples with a relationship duration of more than 10

years were more satisfied and showed smaller declines. Future studies are needed to specifically address why some couples overcome the 10-year itch, while other couples separate at this point in their relationship. It is reasonable to assume that the mechanisms discussed above (e.g., communication, intimacy, need fulfillment) work as buffer against deterioration of relationship satisfaction among the more satisfied couples.

### **Is There a Reason to Worry?**

The meta-analytic evidence on a decline in relationship satisfaction—particularly in young adulthood and in relationships with a duration of less than 10 years—raises the important question of whether there is reason to worry. Do couples unavoidably become less satisfied in their relationship over the years? And does declining relationship satisfaction automatically lead to relationship dissolution?

First, it is crucial to emphasize that the present findings show the average trajectory across a large number of individuals. Clearly, the development of relationship satisfaction is characterized by a large degree of interindividual (or between-couple) variability, as evident from many primary studies (e.g., Bühler et al., 2020; Mund et al., 2015). Research has identified a number of key individual differences that account for variability in relationship development and that may soften or aggravate the decline of relationship satisfaction (e.g., couple members' personality; e.g., Karney & Bradbury, 1995; McNulty, 2016). Hence, individuals and couples may well deviate from the average trajectory of relationship satisfaction.

Second, although classic theories on romantic relationships considered declining relationship satisfaction as the major reason why couples separate (Gottman & Levenson, 1992; Lewis & Spanier, 1982), research has questioned this assumption. Instead, as described in the investment model (Rusbult, 1980, 1983), relationship satisfaction is but one factor that contributes to whether a couple stays together or separates. Other factors include investment, perception of alternatives, and commitment. Consequently, although relationship satisfaction

may decrease—especially in young adulthood and at the beginning of the relationship—commitment may increase and bond the couple together.

Third, relationship satisfaction mainly declined from age 20 to 40 years and during the first 10 years of relationships but the absolute level of relationship satisfaction at the low points was still relatively high. In fact, mean POMP scores never went below 77% (of the maximum possible), neither as a function of age nor as a function of relationship duration. Hence, even individuals with lower scores in relationship satisfaction were fairly satisfied with their romantic relationship. These findings might contribute to understanding why the association of relationship satisfaction and relationship stability is often much weaker than expected (Karney & Bradbury, 1995).

### **Is Age or Relationship Duration the More Dominant Time Metric?**

The findings indicated that relationship satisfaction develops as a function of age and of relationship duration. To disentangle the roles of the two time metrics, we conducted meta-regression analyses and sensitivity analyses. Although the decline in relationship satisfaction likely results from a combination of both age and relationship-duration effects, the analyses suggested that age is the more dominant time metric. These findings are informative for better understanding the role of individual-difference aspects (e.g., age) and relationship-specific aspects (e.g., relationship duration) for romantic relationships.

A recent article using machine learning tested the predictive effects of individual-difference and relationship-specific constructs on relationship quality, on the basis of 43 longitudinal data sets (Joel et al., 2020). The findings indicated that actor-reported relationship-specific constructs (e.g., sexual satisfaction, conflict) predicted more variance in relationship quality than actor-reported individual-difference constructs (e.g., life satisfaction, insecure attachment) or partner-reported constructs. Joel et al. (2020) also included age and relationship duration in their analyses and found that both predicted relationship quality. Yet, although their machine-learning method employed recursive partitioning, age and relationship



duration might not have been simultaneously controlled for each other. This could have led to overestimation of the effect of one time metric (and underestimation of the effect of the other time metric). The present meta-analytic findings contribute to the understanding of the unique effects of age and relationship duration, by showing that age tended to explain more variance in development of relationship satisfaction than did relationship duration. Thus, this meta-analysis suggests that the individual-difference time metric (i.e., age) has greater predictive power than the relationship-specific time metric (i.e., relationship duration). However, future research should continue to examine individual-difference and relationship-specific constructs in their prediction of relationship satisfaction to better understand their interplay.

### **The Role of Moderators in the Development of Relationship Satisfaction**

The pattern of findings was relatively robust across the moderators tested. The only two characteristics that explained variability in mean levels were presence of children and use of a global satisfaction measure. Moreover, we note that time lag between assessments had a marginally significant effect on mean change. In the following, we discuss these moderators more closely.

First, presence of children predicted lower mean levels in relationship satisfaction, corresponding to findings reported in the literature (Twenge et al., 2003). However, the present findings indicated that parents and nonparents did not differ in mean *change* in relationship satisfaction. This suggests that the shape of the trajectory of relationship satisfaction does not depend on whether a romantic couple has children or not, even if the absolute level of the trajectory is lower for parents compared to nonparents.

Second, use of a global satisfaction measure (vs. use of an adjustment measure) predicted higher mean levels in relationship satisfaction. Whereas adjustment measures assess specific aspects in the romantic relationship (e.g., “How often do you and your partner quarrel?” in the DAS; Spanier, 1976), global satisfaction measures assess the individual’s evaluation of the relationship on a more general level (e.g., “How good is your relationship

compared to most?" in the RAS; Hendrick, 1988). Thus, global satisfaction versus adjustment measures capture relationship satisfaction at different levels, providing distinct insights into the functioning of a romantic relationship. Previous research suggested that global satisfaction measures yield smaller estimates of change compared to adjustment measures (e.g., Eddy et al., 1991; Mitnick et al., 2009). The present meta-analysis, however, indicated that the distinction between measures does not explain between-study differences in mean change in relationship satisfaction. This finding suggests that conclusions about the shape of developmental trajectories in relationship satisfaction do not depend on the type of measure used in the research.

Finally, the time lag between assessments showed a tentative effect on mean change in relationship satisfaction, predicting more positive (or less negative) change. It is important to note that time lag was not a moderator simply because longer time intervals allow for greater change. In fact, the effect size measure of mean change used in this research already accounted for differences in the time lag between assessments. Rather, the moderator effect of time lag suggests that samples that are assessed over longer intervals may differ systematically from samples that are assessed over shorter intervals. For example, couples that participate in studies over long periods might be more stable than couples that decide against participating in a longterm study or couples that drop out of longterm studies (e.g., because they dissolved their relationship during the course of the study). Karney and Bradbury (2020) recently emphasized the importance of optimal time lags for studying relationship development, suggesting that long time lags between assessments might mask the smaller changes and those that potentially occur before couples dissolve. Nevertheless, with regard to the present research goal—i.e., tracking development of relationship satisfaction as a function of age and relationship duration—we believe that both studies across shorter intervals (e.g., 1 year) and studies across long intervals (e.g., 10 years and longer) provide relevant information. Thus, all information should be used when synthesizing the evidence.

### **Lessons Learned From Combining Cross-Sectional and Longitudinal Information**

Table 9 summarizes the main findings and lessons learned from combining cross-sectional and longitudinal information in the study of development of relationship satisfaction. The use of both cross-sectional and longitudinal information enabled us to capture different types of information. Specifically, the cross-sectional information provided insights into differences in mean levels (as a function of age and relationship duration). The longitudinal information provided insights into mean change within a given relationship (as a function of age and relationship duration). Figures 7 and 8 illustrate that the cross-sectional and longitudinal data did not reflect the same trajectory (see also Bradbury & Karney, 2019). Whereas the cross-sectional data suggested a U-shaped curve for age and a more complex, dynamic pattern for relationship duration, the longitudinal data suggested declines within a given relationship. Despite this difference between the cross-sectional and longitudinal data, we believe that combining the cross-sectional and longitudinal information offers important insights. Whereas knowledge on age differences in mean levels is particularly relevant for life-course research and developmental psychology, knowledge on relationship-duration differences in mean levels is particularly relevant for relationship research. Similarly, knowing how relationship satisfaction develops within an average relationship and understanding the role of age and relationship duration might be valuable for researchers studying romantic relationships.

Understanding the development of relationship satisfaction across the life span has also practical implications. For instance, the present findings might serve as the basis for designing effective psychoeducation on the normativeness of a decline in relationship satisfaction in adulthood, to counteract unrealistic expectations (e.g., Finkel et al., 2014). Moreover, the findings might be a valuable starting point to design interventions that could specifically consider the level and rate of change of relationship satisfaction in a particular developmental period of the life span (e.g., middle adulthood).

### **Limitations and Future Directions**

Although the meta-analytic data set included samples from 16 countries, one limitation is that the majority of samples were from Western countries (e.g., United States, the Netherlands). Because few studies from Asian countries were available, and none from African and South American countries, the present data did not allow testing whether the results hold outside of North America and Europe. Thus, in future research it would be desirable to examine the development of relationship satisfaction across diverse cultural contexts (Henrich et al., 2010). This is particularly relevant given that research on related topics, such as development of life satisfaction, advises caution in generalizing the findings based on Western samples to non-Western cultures (e.g., Deaton, 2008).

On a related note, the search for this meta-analysis relied exclusively on English-language journal articles, books, book chapters, and dissertations, which risks a mono-language bias (Johnson, 2021). More precisely, it is possible that effects vary across cultural contexts but that this variation could not be detected because of restrictions in language. Therefore, in future research it will be important to also include reports written in other languages. In fact, studying relationships across different language contexts is important for better understanding whether relationship satisfaction is conceptualized similarly across diverse cultures.

Another limitation is that no effect sizes were available for samples older than 76 years. Thus, no conclusions can be drawn about the development of relationship satisfaction in very old age. A likely reason for the absence of effect sizes in very old age is that few couples from this age group participate in longitudinal studies on romantic relationships, for example because of health constraints or because one of the partners is already deceased. Moreover, the number of samples with a mean age of 50 years and older was relatively low (see Tables 3 and 4). Consequently, the conclusions for the development of relationship satisfaction are less strong for middle-aged and older adults. Nevertheless, the confidence

intervals of the weighted mean effect sizes were narrow at least above age 65 years.

Moreover, the effect sizes for the age groups from 50 to 76 years were still based on a relatively large number of participants (i.e., ranging from 1,710 to 2,301 individuals). Thus, we believe that the point estimates for middle-aged and older adults are sufficiently valid and should be used as best estimates of development of relationship satisfaction across the observed age range.

In the analyses, information was included only from participants who provided data on at least two measurement occasions (that is, the meta-analysis did not examine satisfaction with relationships that ended before the second assessment). It is possible that this methodological aspect has led to an underestimation of the decline of relationship satisfaction over time. Furthermore, in nearly all samples, participants were involved mainly in opposite-sex relationships, and only two samples consisted of participants from same-sex relationships. Research has suggested that the trajectories of relationship satisfaction might differ between same-sex and opposite-sex relationships (e.g., Chen & van Ours, 2018). Thus, more research is needed that examines the development of relationship satisfaction in individuals involved in diverse types of relationships, including same-sex relationships.

Similarly, the high correlation between age and relationship duration across samples points to a lack of research studying new relationships among older adults. In fact, the mean age at divorce has increased and thus the number of divorces in late adulthood has grown. The rate of so-called “gray divorces”—that is, divorces above age 50 years—has almost doubled between 1990 and 2010 in the United States (Brown & Lin, 2012). In addition, the present research focused on the development of relationship satisfaction of individuals who are involved in a romantic relationship. Thus, this meta-analysis could not address the very beginning of relationships (e.g., the development from a potential relationship to an “official” relationship). Similarly, we could not address the very end of relationships (e.g., change in relationship satisfaction during the process of breaking up). Hence, a limitation is that the

present research did not examine the temporal dynamics across the complete time span of a relationship or of entire relationship histories (for a meta-theoretical framework on relationship trajectories, see Eastwick et al., 2019). For example, recent findings on cross-relationship development indicate that people become less satisfied in their relationship over time. At the same time, they tend to experience a substantial increase between their relationships, that is, from the end of one relationship to the beginning of the next relationship (Johnson & Neyer, 2019). Thus, more research is needed that studies romantic relationship dynamics across the entire life span, including new relationships among older couples, the beginning and ending of relationships, and the transition from one relationship to the next. Such insights may be gained by using data from longitudinal studies (ideally with nationally representative samples) that follow participants across their relationships (e.g., Diamond et al., 2010; for a similar approach in young adulthood, see Johnson & Neyer, 2019).

Moreover, future research on the development of relationship satisfaction should continue to combine cross-sectional and longitudinal information, while considering the role of potential upward bias in initial reports (Shrout et al., 2018). Specifically, experimental studies have observed an initial elevation bias, suggesting that individuals have an upward tendency in self-reports at the first assessment of a longitudinal study. According to Shrout et al. (2018), correcting for this bias could be important for obtaining more valid findings in longitudinal studies using self-reports. In the present meta-analytic data set, however, we did not correct the Time 1 data for potential bias, for two reasons. First, in this meta-analysis the Time 1 data did not necessarily reflect the initial assessment of a longitudinal study (e.g., when study authors used Time 4 and Time 5 data from a larger data set as their Time 1 and Time 2 data in their article). Second, the findings from Shrout et al. (2018) were based on student and graduate samples, and are thus still limited to specific developmental periods. Therefore, in this meta-analysis we refrained from correcting for the potential initial elevation

bias, but we believe that it would be valuable to address this issue in future research on development of relationship satisfaction.

Finally, although we tested a relatively broad set of factors that could potentially moderate the development of relationship satisfaction (such as birth cohort and ethnicity), most of these factors were nonsignificant. Future research should continue to test for factors that explain why some individuals show strong declines in relationship satisfaction, whereas others experience only minor declines, no change, or even positive changes. Specifically, three individual-difference constructs have been found to be particularly relevant for romantic relationship development: neuroticism, self-esteem, and secure attachment (e.g., Bühler et al., 2020; Erol & Orth, 2016; Karney & Bradbury, 1995; McNulty, 2016). Given that these constructs are not assessed in most primary studies, in this meta-analysis it was not possible to examine the degree to which they explain variability in development of relationship satisfaction.

### **Conclusion**

Based on longitudinal data from 165 samples with more than 165,000 participants, this meta-analysis provides a robust picture of normative development in relationship satisfaction across the life span. The findings show that relationship satisfaction varies systematically as a function of age and relationship duration. Moreover, the moderator analyses indicate that the developmental patterns in relationship satisfaction hold across most sample and methodological characteristics, which strengthens confidence in the robustness of the findings.

The findings illustrate that it is crucial to consider both cross-sectional and longitudinal information. As discussed, we believe that the cross-sectional information provides the most valid conclusions about the normative trajectory of relationship satisfaction, while the longitudinal information provides the most accurate conclusions on the rate of change within a given romantic relationship. Moreover, the findings illustrate that it is crucial

to distinguish between the time metrics of age and relationship duration. Although the overall trend included both decreases and increases in relationship satisfaction across the life span, the trajectory differed substantially between the two time metrics. Whereas relationship satisfaction showed a U-shaped trend as a function of age, relationship satisfaction showed a more complex, dynamic pattern as a function of relationship duration. Specifically, as regards age, relationship satisfaction decreased from age 20 to 40, reached a low point at age 40, then increased until age 65, and reached a plateau in late adulthood. As regards the metric of relationship duration, relationship satisfaction decreased within the first 10 years of the relationship, reached a low point at 10 years, then increased until 20 years, and then decreased again. Even if decreases in relationship satisfaction do not necessarily lead to separation and divorce, a satisfying romantic relationship is an important source of support, happiness, and meaning for the partners involved. Thus, the present findings may stimulate future research to develop prevention and intervention programs for couples in all developmental stages across the life span.



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**Table 1***Descriptive Information and Effect Sizes for the Samples Included in the Meta-Analysis*

Study	Sample and methodological characteristics								Effect sizes	
	Sample size	Mean age T1	Mean relationship duration T1	Female (in %)	Sample type	Country	Ethnicity	Measure	POMP <sub>T1</sub>	$\Delta$ POMP <sub>year</sub>
Andres (2014)	153	34.00	12.00	100	Community	NL	White	ENRICH	78.50	-11.33
Be et al. (2013), female	1,385	63.20	n.a.	100	National	GB	n.a.	Ad-hoc	79.22	0.17
Be et al. (2013), male	1,385	65.70	n.a.	0	National	GB	n.a.	Ad-hoc	83.67	0.08
Bikos et al. (2007)	32	38.63	n.a.	100	Community	TUR	White	KMSS	82.78	2.56
Blumenstock & Papp (2017), female	373	24.30	4.30	100	Community	USA	Other	Ad-hoc	88.00	-2.33
Blumenstock & Papp (2017), male	373	26.50	4.30	0	Community	USA	Other	Ad-hoc	89.00	-0.83
Bodi et al. (2010)	389	35.04	10.87	100	Community	n.a.	White	RAS	77.60	-2.27
Bookwala (2009)	716	44.20	n.a.	52	National	USA	White	Ad-hoc	74.50	0.63
Bouchard (2014), female	151	28.00	6.25	100	Community	CAN	White	DAS	81.95	-1.69
Bouchard (2014), male	151	31.00	6.25	0	Community	CAN	White	DAS	81.00	-0.50
Bouchard et al. (2006), female	119	28.18	7.25	100	Community	CAN	n.a.	DAS	83.15	-3.63
Bouchard et al. (2006), male	119	30.40	7.25	0	Community	CAN	n.a.	DAS	82.15	-1.40
Bower et al. (2013), female	97	n.a.	7.81	100	Community	USA	White	DAS	78.30	-1.67
Bower et al. (2013), male	99	n.a.	7.81	0	Community	USA	White	DAS	79.34	-2.42
Brown et al. (2019)	88	54.98	n.a.	63	Community	USA	White	CSI	75.52	-7.52
Busby & Gardner (2008), female	275	26.29	4.25	100	Community	USA	White	REQ	78.50	3.00
Busby & Gardner (2008), male	275	28.32	4.25	0	Community	USA	White	REQ	76.50	3.75
Buyukcan-Tetik et al. (2017), female	229	39.51	n.a.	100	Community	NL	White	RISS	84.25	1.29
Buyukcan-Tetik et al. (2017), male	229	41.98	n.a.	0	Community	NL	White	RISS	87.50	0.43
Byers (2005)	87	37.70	12.20	62	Community	n.a.	White	GMRS	85.30	-0.80



Chong & Mickelson (2016), female	93	28.31	7.18	100	Community	USA	White	RAS	64.00	-8.10
Chong & Mickelson (2016), male	93	30.24	7.18	0	Community	USA	White	RAS	63.83	-10.00
Christopher et al. (2015), female	96	29.34	3.52	100	Community	USA	White	MOQ	80.67	-6.83
Christopher et al. (2015), male	96	31.23	3.52	0	Community	USA	White	MOQ	78.33	-3.61
Doohan et al (2010), female	102	38.76	13.00	100	Community	USA	Other	MAT	73.21	0.21
Doohan et al. (2010), male	102	41.20	13.00	0	Community	USA	Other	MAT	72.40	0.29
Durtschi (2011), female parents	260	22.97	5.63	100	Community	USA	White	QMI	92.85	-3.33
Durtschi (2011), male parents	260	24.59	5.63	0	Community	USA	White	QMI	89.45	-1.88
Durtschi (2011), female non-parents	107	24.50	4.46	100	Community	USA	White	QMI	86.85	0.42
Durtschi (2011), male non-parents	107	25.97	4.46	0	Community	USA	White	QMI	88.95	-2.93
Erol & Orth (2014), Study 2, female	6,115	40.30	15.90	100	National	USA	White	Ad-hoc	84.17	-0.39
Erol & Orth (2014), Study 2, male	6,115	43.00	15.90	0	National	USA	White	Ad-hoc	85.33	-0.47
Fagan & Lee (2014)	6,100	35.80	n.a.	0	National	USA	Other	Ad-hoc	85.50	-1.50
Fallis et al. (2016), female	113	35.73	10.47	100	Community	CAN	White	QMI	83.85	0.04
Fallis et al. (2016), male	113	37.96	10.47	0	Community	CAN	White	QMI	83.23	0.05
Favez et al. (2006), female	38	31.00	6.80	100	Community	CHE	White	DAS	79.47	-2.87
Favez et al. (2006), male	38	33.00	6.80	0	Community	CHE	White	DAS	78.15	-2.06
Fillo et al. (2015), female	194	26.70	7.10	100	Community	USA	White	DAS	85.76	-1.97
Fillo et al. (2015), male	192	28.40	7.10	0	Community	USA	White	DAS	85.02	-0.73
Fincham & Beach (2007), female	84	41.10	n.a.	100	Community	USA	White	MAT	75.45	-1.73
Fincham & Beach (2007), male	84	43.30	n.a.	0	Community	USA	White	MAT	73.37	-0.08
Frost & Forrester (2013)	1,659	34.11	8.74	78	Community	n.a.	Other	CSI	85.19	1.04
Gao & Cummings (2019), female	237	37.82	16.80	100	Community	USA	White	MAT	72.37	-3.19
Gao & Cummings (2019), male	237	40.15	16.80	0	Community	USA	White	MAT	72.61	0.11
Girme et al. (2018), Study 2	277	23.34	1.81	52	Community	USA	Other	RSI	69.25	3.41
Goldberg et al. (2018)	118	39.42	7.60	100	Community	USA	White	IRQ	84.88	-2.07

Greving Mehall et al. (2009), female	157	30.59	9.37	100	Community	USA	White	MAT	77.13	-0.14
Greving Mehall et al. (2009), male	157	32.58	9.37	0	Community	USA	White	MAT	76.39	0.79
Gustavson et al. (2016), female	238	46.00	n.a.	100	Community	NOR	White	RAS	76.50	-0.25
Gustavson et al. (2016), male	194	48.00	n.a.	0	Community	NOR	White	RAS	79.25	0.42
Hagemeyer et al. (2013), female	547	39.40	11.40	100	Community	DEU	White	Ad-hoc	81.30	0.60
Hagemeyer et al. (2013), male	547	41.60	11.40	0	Community	DEU	White	Ad-hoc	81.30	0.10
Hakanen et al. (2011)	1,632	44.90	n.a.	72	Community	FIN	White	RSI	74.00	-0.46
Halford et al. (2007), female	191	31.50	3.90	100	Community	AUS	White	DAS	82.85	-0.79
Halford et al. (2007), male	191	34.10	3.90	0	Community	AUS	White	DAS	81.92	-0.07
Hammond & Overall (2014), female	88	21.08	2.58	100	Community	NZL	n.a.	PRQC	84.67	-6.00
Hammond & Overall (2014), male	88	22.73	2.58	0	Community	NZL	n.a.	PRQC	84.33	-5.67
Harper (2003)	32	47.57	n.a.	0	Community	USA	White	KMSS	83.83	-0.18
Hernandez-Kane & Mahoney (2018)	67	29.85	5.05	67	Community	USA	White	KMSS	84.06	-5.11
Homish et al. (2009), female	634	26.80	n.a.	100	Community	USA	Other	MAT	75.96	-7.31
Homish et al. (2009), male	634	28.70	n.a.	0	Community	USA	Other	MAT	74.29	-5.96
Hsiao (2017)	614	42.83	n.a.	82	Community	TWN	Asian	Ad-hoc	70.50	0.33
Ivanova (2016)	4,116	46.90	23.83	60	National	NLD	White	Ad-hoc	87.00	-0.50
Jayamaha & Overall (2015)	156	22.21	2.30	65	Student	NZL	n.a.	PRQC	83.17	-9.33
Jenkins et al. (2020), female	168	40.75	15.41	100	Community	USA	Black	CRD	71.73	2.02
Jenkins et al. (2020), male	168	43.57	15.41	0	Community	USA	Black	CRD	78.92	-1.77
Jensen & Rauer (2015a), female	64	70.00	46.20	100	Community	USA	White	MSQO	81.35	-2.53
Jensen & Rauer (2015a), male	64	71.00	46.20	0	Community	USA	White	MSQO	80.31	-1.57
Jensen & Rauer (2015b)	67	20.80	3.03	100	Student	USA	White	IRQ	76.13	7.00
Johnson & Anderson (2013), female	610	28.45	2.58	100	Community	USA	White	Ad-hoc	81.00	-2.93
Johnson & Anderson (2013), male	610	30.52	2.58	0	Community	USA	White	Ad-hoc	81.25	-1.75
Kanat-Maymon et al. (2016), Israeli, female	102	41.53	n.a.	100	Community	ISR	White	ENRICH	72.50	-1.75

Kanat-Maymon et al. (2016), Israeli, male	103	43.11	n.a.	0	Community	ISR	White	ENRICH	73.75	-2.38
Kanat-Maymon et al. (2016), German, female	209	39.16	n.a.	100	Community	DEU	White	ENRICH	70.25	-2.00
Kanat-Maymon et al. (2016), German, male	210	41.14	n.a.	0	Community	DEU	White	ENRICH	71.00	-1.50
Kerkhof et al. (2011), female	199	29.20	5.77	100	Community	NLD	White	DAS	73.07	0.15
Kerkhof et al. (2011), male	199	32.07	5.77	0	Community	NLD	White	DAS	74.02	-0.66
Kouros (2011), female	296	37.84	14.38	100	Community	USA	White	MAT	70.57	-2.44
Kouros (2011), male	296	40.22	14.38	0	Community	USA	White	MAT	68.97	0.77
Lavner & Bradbury (2010), female	232	25.50	4.13	100	Community	USA	Other	MAT	80.38	-3.95
Lavner & Bradbury (2010), male	232	27.00	4.13	0	Community	USA	Other	MAT	78.85	-4.50
Lawrence et al. (2008), female	101	24.50	4.25	100	Community	USA	n.a.	MAT	78.44	-4.24
Lawrence et al. (2008), male	101	25.91	4.25	0	Community	USA	n.a.	MAT	77.21	-3.91
LeBaron et al. (2014)	67	46.00	27.70	100	Community	USA	White	Ad-hoc	87.00	-0.11
Li et al. (2018), female	268	28.08	4.93	100	Community	CHN	Asian	QMI	86.54	-2.77
Li et al. (2018), male	268	29.59	4.93	0	Community	CHN	Asian	QMI	88.31	-4.54
Lin et al. (2017), female	141	39.84	n.a.	100	Community	TWN	Asian	KMSS	75.00	-0.67
Lin et al. (2017), male	141	42.06	n.a.	0	Community	TWN	Asian	KMSS	80.17	0.17
Logan & Cobb (2013)	268	23.60	2.74	82	Student	CAN	Other	RAS	84.50	-6.00
Lorber et al. (2015), female	396	23.41	n.a.	100	Community	USA	White	MAT	78.18	-5.31
Lorber et al. (2015), male	396	25.22	n.a.	0	Community	USA	White	MAT	76.43	-5.46
Marini (2017), female	154	30.93	8.66	100	Community	USA	White	MAT	80.89	-1.82
Marini (2017), male	154	32.40	8.66	0	Community	USA	White	MAT	79.11	1.53
Marshall et al. (2017), female	99	40.00	15.00	100	Community	NZL	White	PRQC	91.02	-1.40
Marshall et al. (2017), male	99	42.00	15.00	0	Community	NZL	White	PRQC	89.37	-0.90
Meltzer et al. (2014), Study 3, female	72	23.54	n.a.	100	Community	USA	White	QMI	91.64	-4.41
Meltzer et al. (2014), Study 3, male	72	24.92	n.a.	0	Community	USA	White	QMI	89.67	-3.46
Meltzer et al. (2013), female	169	23.40	n.a.	100	Community	USA	n.a.	QMI	92.85	-7.18

Meltzer et al. (2013), male	169	25.60	n.a.	0	Community	USA	n.a.	QMI	91.67	-6.51
Menéndez et al. (2011), female	108	27.12	n.a.	100	Community	ESP	n.a.	Ad-hoc	82.60	-8.58
Menéndez et al. (2011), male	79	28.73	n.a.	0	Community	ESP	n.a.	Ad-hoc	84.90	-3.75
Miller et al. (2003), female	168	21.00	n.a.	100	Community	USA	White	MOQ	89.83	-7.00
Miller et al. (2003), male	168	24.00	n.a.	0	Community	USA	White	MOQ	89.50	-4.83
Moen (2012), female	306	22.59	n.a.	100	Community	USA	White	KMSS	93.67	-1.44
Moen (2012), male	306	24.50	n.a.	0	Community	USA	White	KMSS	93.50	-0.82
Mund et al. (2015) Study 1	186	26.82	6.31	66	Community	DEU	White	RAS	81.00	-0.31
Mund et al. (2015), Study 2, female	2,124	31.35	9.38	100	National	DEU	White	RAS	83.40	-3.10
Mund et al. (2015), Study 2, male	2,124	34.16	9.38	0	National	DEU	White	RAS	84.00	-2.70
Myers (2006)	2,033	35.46	16.36	60	National	USA	White	Ad-hoc	92.45	-0.12
Naud et al. (2013), female	299	28.00	n.a.	100	Community	CAN	n.a.	DAS	78.08	-2.06
Naud et al. (2013), male	299	30.00	n.a.	0	Community	CAN	n.a.	DAS	77.61	-2.08
Neff & Karney (2003), female	82	23.70	4.30	100	Community	USA	White	SD	91.89	-12.67
Neff & Karney (2003), male	82	25.10	4.30	0	Community	USA	White	SD	90.33	-9.56
Nguyen et al. (2017), female	414	26.30	4.20	100	Community	USA	Hispanic	Ad-hoc	86.55	-1.29
Nguyen et al. (2017), male	414	27.90	4.20	0	Community	USA	Hispanic	Ad-hoc	89.31	-2.16
Niessen et al. (2018)	133	42.75	n.a.	31	Community	DEU	White	QMI	76.50	-5.50
Ogolsky et al. (2016), female	193	23.26	2.19	100	Community	USA	Other	MOQ	80.33	-6.67
Ogolsky et al. (2016), male	183	24.80	2.19	0	Community	USA	Other	MOQ	79.17	-6.00
Orth et al. (2015)	2,509	47.60	n.a.	40	Community	DEU	White	SRS	81.40	-0.30
Orth et al. (2012)	1,448	49.83	n.a.	57	Community	USA	White	RSS	72.00	-0.08
Padilla et al. (2018), female	246	39.38	19.12	100	Community	USA	Hispanic	DMS	72.88	-0.43
Padilla et al. (2018), male	246	41.94	19.12	0	Community	USA	Hispanic	DMS	79.00	0.02
Parfitt et al. (2014), female	75	33.04	6.08	100	Community	GBR	White	DAS	78.10	-2.96
Parfitt et al. (2014), male	66	34.08	6.33	0	Community	GBR	White	DAS	78.96	-2.79

Parise et al. (2017), female	139	29.20	5.50	100	Community	ITA	White	QMI	88.33	2.22
Parise et al. (2017), male	139	31.00	5.50	0	Community	ITA	White	QMI	89.17	1.56
Peltz et al. (2018), female	249	35.00	10.50	100	Community	USA	White	CSI	75.29	-7.43
Peltz et al. (2018), male	249	36.00	10.50	0	Community	USA	White	CSI	73.71	-3.81
Porter & Dyer (2017)	101	25.22	6.85	100	Community	USA	White	IRQ	88.85	0.50
Rayl (2012), soldiers	52	36.41	10.42	8	Community	USA	White	QMI	73.00	-1.43
Rayl (2012), partners	52	34.92	10.42	92	Community	USA	White	QMI	68.00	2.14
Reizer et al. (2014), Study 3, female	44	29.17	8.16	100	Community	ISR	n.a.	MAT	86.80	0.20
Reizer et al. (2014), Study 3, male	44	30.34	8.16	0	Community	ISR	n.a.	MAT	84.80	0.00
Ruffieux et al. (2014), female	162	40.40	14.60	100	Community	CHE	White	PFB	64.67	0.23
Ruffieux et al. (2014), male	162	42.60	14.60	0	Community	CHE	White	PFB	62.67	0.37
Schober (2012), female	5,624	33.55	7.94	100	Community	GBR	White	Ad-hoc	76.78	-0.10
Schober (2012), male	5,624	35.98	7.94	0	Community	GBR	White	Ad-hoc	77.44	1.23
Schoenfeld et al. (2012), female	168	n.a.	3.96	100	Community	USA	White	IRQ	92.25	-3.50
Schoenfeld et al. (2012), male	168	n.a.	3.96	0	Community	USA	White	IRQ	89.38	-3.38
Simonelli et al. (2016), female	83	33.17	8.48	100	Community	ITA	White	DAS	80.05	-1.85
Simonelli et al. (2016), male	83	35.33	8.48	0	Community	ITA	White	DAS	80.01	-4.19
Sotskova et al. (2015), female	98	29.98	n.a.	100	Community	CAN	White	DAS	81.76	-2.89
Sotskova et al. (2015), male	98	32.03	n.a.	0	Community	CAN	White	DAS	78.36	-2.33
Sullivan et al. (2017)	86	22.50	n.a.	64	Community	USA	Other	RAS	76.25	3.25
Sun et al. (2017), female	164	40.53	16.52	100	Community	USA	Black	CRD	70.50	1.50
Sun et al. (2017), male	164	43.11	16.52	0	Community	USA	Black	CRD	77.75	-2.25
Szepsenwol et al. (2015), female	62	24.53	.26	100	Community	ISR	n.a.	RAS	84.00	-0.24
Szepsenwol et al. (2015), male	62	25.87	.26	0	Community	ISR	n.a.	RAS	83.50	-0.24
Tombeau Cost et al. (2018)	222	31.77	7.32	100	Community	CAN	n.a.	QMI	86.33	-2.56
Tremblay & Pierce (2011)	160	30.00	4.00	0	Community	CAN	White	DAS	80.71	-2.18

van den Troost et al. (2005), Study 3, female	386	45.00	25.80	100	National	NLD	White	Ad-hoc	84.83	-0.57
van den Troost et al. (2005), Study 3, male	386	47.50	25.80	0	National	NLD	White	Ad-hoc	85.50	-0.37
van Scheppingen et al. (2018)	84,711	29.59	n.a.	100	National	NOR	White	Ad-hoc	84.94	-1.32
Velotti et al. (2016), female	229	31.29	5.40	100	Community	ITA	White	DAS	80.28	-1.75
Velotti et al. (2016), male	229	32.97	5.40	0	Community	ITA	White	DAS	81.69	-1.42
Villeneuve et al. (2014), female	394	72.30	46.05	100	Community	CAN	n.a.	DAS	77.30	0.14
Villeneuve et al. (2014), male	394	75.10	46.05	0	Community	CAN	n.a.	DAS	79.81	-0.04
Volling et al. (2015), female	241	31.60	9.57	100	Community	USA	White	IRQ	80.00	-4.00
Volling et al. (2015), male	241	33.20	9.57	0	Community	USA	White	IRQ	82.75	-2.00
Weidmann et al. (2017), female	237	48.40	23.50	100	Community	CHE	White	RAS	80.25	0.63
Weidmann et al. (2017), male	237	50.70	23.50	0	Community	CHE	White	RAS	82.25	0.50
Whiteman et al. (2007), female	188	36.74	17.36	100	Community	USA	White	DMS	73.64	-2.05
Whiteman et al. (2007), male	188	38.92	17.36	0	Community	USA	White	DMS	76.02	-0.50
Whitton et al. (2014)	748	25.71	3.14	65	Community	USA	White	DAS	79.57	-1.62
Zee & Weiss (2019)	678	46.41	20.70	50	National	USA	n.a.	Ad-hoc	74.75	-0.03

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*Note.* Mean age and mean relationship duration are given in years. The column “Female” shows the percentage of female participants. T1 = Time 1.  $POMP_{T1}$  = mean POMP score of relationship satisfaction at Time 1,  $\Delta POMP_{year}$  = mean change in POMP scores of relationship satisfaction per year. “n.a.” indicates that data were not available. Country follows the ISO–3166–1 alpha–3 codes: AUS = Australia; CAN = Canada; CHE = Switzerland; CHN = China; DEU = Germany; ESP = Spain; FIN = Finland; GBR = United Kingdom of Great Britain and Northern Ireland; ITA = Italy; ISR = Israel; NLD = Netherlands; NOR = Norway; NZL = New Zealand; USA = United States of America, TUR = Turkey; TWN = Taiwan. Measures were as follows (including adaptations, subscales, and translations thereof): CRD = Couple Relationship Domains Questionnaire (Huston et al., 1986); CSI = Couples Satisfaction Index (Funk & Rogge, 2007); DAS = Dyadic Adjustment Scale (Spanier, 1976); ENRICH = ENRICH Marital Satisfaction (Fowers & Olson, 1993); GMRS = Global Measure of Relationship Satisfaction (Lawrance et al., 1998); IRQ = Intimate Relations Questionnaire (Braiker & Kelley, 1979); KMSS = Kansas Marital Satisfaction Scale (Schumm et al., 1986); MAT = Marital Adjustment Test (Locke & Wallace, 1959); MOQ = Marital Opinion Questionnaire (Huston & Vangelisti 1991); MSQO = Marital Satisfaction Questionnaire for Older Persons (Haynes et al., 1992); PFB = Partnership Questionnaire (Partnerschaftsfragebogen; Hahlweg, 1996); PRQC = Perceived Relationship Quality Components Inventory (Fletcher et al., 2000); QMI = Quality of Marriage Index (R. Norton, 1983); RAS = Relationship Assessment Scale (Hendrick, 1988); REQ = Relationship Evaluation Questionnaire (Busby et al., 2001); RISS = Relational Interaction Satisfaction Scale (Buunk & Nijskens, 1980); RSI = Relationship Satisfaction subscale from the Investment Model Scale (Rusbult et al., 1998); RSS = Relationship Satisfaction Scale (Gilford & Bengtson, 1979); SD = Semantic Differential (Osgood et al., 1957); SRS = Self-Report Relationship Satisfaction (Schmitt et al., 1997); ad-hoc = measure constructed for the study (without a name).

**Table 2***Tests of Publication Bias*

Effect size	Egger's regression test			Peer-reviewed journal articles versus dissertations <sup>a</sup>				Effect size data published versus not published in study <sup>b</sup>			
	<i>k</i>	<i>t</i>	<i>p</i>	<i>k<sub>j</sub></i>	<i>k<sub>d</sub></i>	<i>F</i>	<i>p</i>	<i>k<sub>p</sub></i>	<i>k<sub>n</sub></i>	<i>F</i>	<i>p</i>
POMP <sub>T1</sub>	165	-1.996	.048	152	13	1.440	.232	116	49	0.129	.720
ΔPOMP <sub>year</sub>	165	-5.208	<.001	152	13	0.728	.395	116	49	0.040	.842

*Note.* Computations were made with mixed-effects meta-regression models. POMP<sub>T1</sub> = mean POMP score of relationship satisfaction at Time 1, ΔPOMP<sub>year</sub> = mean change in POMP scores of relationship satisfaction per year. *k* = number of samples, *k<sub>j</sub>* = number of samples from peer-reviewed journal articles, *k<sub>d</sub>* = number of samples from dissertations, *k<sub>p</sub>* = number of samples for which effect size data were published, *k<sub>n</sub>* = number of samples for which effect size data were not published but obtained from study authors.

<sup>a</sup> 1 = peer-reviewed journal article, 0 = dissertation.

<sup>b</sup> 1 = effect size data published, 0 = effect size data not published.



**Table 3***Estimates of Mean Level of Relationship Satisfaction at Time 1 as a Function of Age and Relationship Duration*

Group	$k$	$N$	Weighted mean effect size (POMP <sub>T1</sub> )	95% CI	Heterogeneity		
					$Q$	$\tau^2$	$I^2$
<b>Age</b>							
20–30 years	60	97,478	<b>83.61</b>	[81.99, 85.23]	<b>3593.7</b>	38.072	99.0
30–40 years	56	33,835	<b>79.31</b>	[77.92, 80.71]	<b>2810.4</b>	25.173	98.2
40–50 years	37	29,183	<b>77.61</b>	[75.30, 79.92]	<b>3197.2</b>	46.586	99.0
50–65 years	3	1,710	<b>79.32</b>	[71.38, 87.26]	<b>12.2</b>	7.913	89.5
65–76 years	5	2,301	<b>80.47</b>	[77.40, 83.55]	<b>107.0</b>	5.927	93.5
<b>Relationship duration</b>							
0–5 years	36	8,186	<b>83.16</b>	[81.43, 84.88]	<b>1054.0</b>	24.844	97.1
5–10 years	42	22,386	<b>81.13</b>	[79.33, 82.94]	<b>2187.8</b>	32.307	98.7
10–20 years	32	20,138	<b>77.02</b>	[74.37, 79.66]	<b>2556.4</b>	52.098	98.8
20–30 years	7	6,107	<b>82.99</b>	[78.89, 87.09]	<b>202.3</b>	18.450	96.9
30–46 years	4	916	<b>79.32</b>	[76.51, 82.14]	<b>13.7</b>	2.371	76.5

*Note.* Computations were made with random-effects models.  $k$  = number of samples;  $N$  = total number of participants in the  $k$  samples; POMP<sub>T1</sub> = mean POMP score at Time 1; CI = confidence interval;  $Q$  = statistic used in heterogeneity test;  $\tau^2$  = estimated amount of total heterogeneity;  $I^2$  = ratio of total heterogeneity to total variability (given in percent). Values in bold are significant at  $p < .05$ .

**Table 4***Estimates of Mean Change in Relationship Satisfaction as a Function of Age and Relationship Duration*

Group	<i>k</i>	<i>N</i>	Weighted mean effect size ( $\Delta\text{POMP}_{\text{year}}$ )	95% CI	Heterogeneity		
					<i>Q</i>	$\tau^2$	<i>I</i> <sup>2</sup>
<b>Age</b>							
20–30 years	60	97,478	<b>–2.942</b>	[–3.840, –2.045]	<b>708.4</b>	9.462	98.4
30–40 years	56	33,835	<b>–1.585</b>	[–2.172, –0.998]	<b>854.3</b>	3.218	97.7
40–50 years	37	29,183	–0.133	[–0.326, 0.059]	<b>267.4</b>	0.130	84.8
50–65 years	3	1,710	–1.531	[–11.710, 8.647]	<b>9.0</b>	12.151	99.0
65–76 years	5	2,301	–0.603	[–2.070, 0.864]	<b>19.9</b>	1.102	90.5
<b>Relationship duration</b>							
0–5 years	36	8,186	<b>–2.600</b>	[–3.823, –1.376]	<b>250.7</b>	9.807	95.1
5–10 years	42	22,386	<b>–1.581</b>	[–2.254, –0.907]	<b>658.9</b>	3.292	96.0
10–20 years	32	20,138	<b>–0.930</b>	[–1.749, –0.111]	<b>287.8</b>	3.289	99.4
20–30 years	7	6,107	–0.129	[–0.528, 0.271]	<b>33.8</b>	0.131	88.7
30–46 years	4	916	–0.858	[–2.935, 1.220]	<b>17.3</b>	1.443	86.8

*Note.* Computations were made with random-effects models. *k* = number of samples; *N* = total number of participants in the *k* samples;  $\Delta\text{POMP}_{\text{year}}$  = mean change in POMP scores per year; CI = confidence interval; *Q* = statistic used in heterogeneity test;  $\tau^2$  = estimated amount of total heterogeneity; *I*<sup>2</sup> = ratio of total heterogeneity to total variability (given in percent). Values in bold are significant at *p* < .05.

**Table 5***Meta-Regression Predicting POMP<sub>T1</sub> from Age and Relationship Duration*

	Model					
	1	2	3	4	5	6
Intercept	<b>80.49</b> [79.35, 81.62]	<b>80.63</b> [79.49, 81.77]	<b>80.11</b> [78.87, 81.34]	<b>79.68</b> [78.37, 81.00]	<b>80.03</b> [78.77, 81.30]	<b>79.53</b> [78.18, 80.87]
Age	<b>-1.21</b> [-2.36, -0.06]	—	<b>-4.03</b> [-7.90, -.16]	<b>-2.47</b> [-4.02, -.91]	—	<b>-4.01</b> [-7.88, -.14]
Relationship duration	—	-0.98 [-2.25, .29]	3.23 [-1.01, 7.47]	—	<b>-2.77</b> [-4.89, -.64]	-0.17 [-2.47, 2.12]
Age <sup>2</sup>	—	—	—	<b>0.72</b> [0.11, 1.34]	—	1.37 [-3.22, 5.95]
Relationship duration <sup>2</sup>	—	—	—	—	<b>0.84</b> [0.03, 1.65]	1.03 [-1.78, 3.84]

*Note.* The table shows unstandardized regression coefficients, with 95% confidence intervals in brackets. Computations were made with mixed-effects meta-regression models.  $k = 117$ . POMP<sub>T1</sub> = mean POMP score of relationship satisfaction at Time 1. To avoid numerically small estimates, in the present analyses we rescaled age and relationship duration by the factor  $10^{-1}$ . Moreover, in the present analyses, age was centered at 35 years, and relationship duration was centered at 10 years. Dash indicates that this estimate is not applicable. Values in bold are significant at  $p < .05$ .

**Table 6***Effect Size POMP<sub>T1</sub> in Three Comparisons of Age Groups with the Same Relationship Duration*

Group	<i>k</i>	Estimate	<i>SE</i>	<i>p</i>
Relationship duration below 10 years				
Age 20–30 years*	42	<b>83.12</b>	0.824	<.001
Age 30–40 years*	32	<b>80.35</b>	0.939	<.001
Relationship duration between 10 and 25 years <sup>a</sup>				
Age 30–40 years	17	<b>77.27</b>	1.793	<.001
Age 40–50 years	18	<b>77.40</b>	1.718	<.001
Relationship duration above 25 years				
Age 40–50 years*	3	<b>85.39</b>	0.881	<.001
Age 65–76 years*	4	<b>79.21</b>	0.724	<.001

*Note.* Computations were made with mixed-effects meta-regression models, showing the intercept of each group as estimate. POMP<sub>T1</sub> = mean POMP score of relationship satisfaction at Time 1. Asterisk indicates that the groups were significantly different from each other. Comparison 1: The age group 20–30 years had significantly higher values than the age group 30–40 years ( $B = 2.77$ ,  $SE = 1.249$ ,  $p = .030$ ). Comparison 2: The difference between the age group 30–40 years and age group 40–50 years was not significant ( $Q_M = 0.003$ ,  $df_1 = 1$ ,  $df_2 = 33$ ,  $p = .958$ ). Comparison 3: The age group 40–50 years had significantly higher values than the age group 65–76 years ( $B = 6.178$ ,  $SE = 1.140$ ,  $p < .003$ ).

<sup>a</sup> In this relationship-duration group, there was only one sample with participants aged 50–65 years, which therefore could not be meaningfully included in the analyses.

**Table 7***Effect Size POMP<sub>T1</sub> in Three Comparisons of Relationship-Duration Groups with the Same Age*

Group	<i>k</i>	Estimate	<i>SE</i>	<i>p</i>
Age below 35 years <sup>a</sup>				
Relationship duration 0–5 years	34	<b>82.69</b>	0.950	<.001
Relationship duration 5–10 years	37	<b>81.29</b>	0.911	<.001
Age between 35 and 50 years				
Relationship duration 5–10 years	3	<b>80.76</b>	4.129	<.001
Relationship duration 10–20 years	30	<b>77.20</b>	1.319	<.001
Relationship duration 20–30 years	6	<b>83.17</b>	2.892	<.001
Age above 50 years				
Relationship duration 20–30 years	1	<b>82.25</b>	1.701	<.001
Relationship duration 30–40 years	4	<b>79.32</b>	0.886	<.001

*Note.* Computations were made with mixed-effects meta-regression models. POMP<sub>T1</sub> = mean POMP score of relationship satisfaction at Time 1. Comparison 1: The difference between relationship-duration groups 0–5 years and 5–10 years was not significant ( $Q_M = 1.131$ ,  $df_1 = 1$ ,  $df_2 = 69$ ,  $p = .291$ ). Comparison 2: The difference between relationship-duration groups 5–10 years and 10–20 years ( $Q_M = 0.6732$ ,  $df_1 = 1$ ,  $df_2 = 31$ ,  $p = .418$ ) and the difference between relationship-duration group 10–20 years and 20–30 years ( $Q_M = 3.552$ ,  $df_1 = 1$ ,  $df_2 = 34$ ,  $p = .068$ ) were not significant. Comparison 3: The difference between relationship-duration group 20–30 years and 30–40 years was not significant ( $Q_M = 2.330$ ,  $df_1 = 1$ ,  $df_2 = 3$ ,  $p = .224$ ).

<sup>a</sup> In this age group, there were only two samples with a relationship duration of more than 10 years, which therefore could not be meaningfully included in the analyses.

**Table 8***Meta-Regression Models for Sample and Methodological Characteristics Predicting Effect Sizes*

Moderator	POMP <sub>T1</sub>				ΔPOMP <sub>year</sub>				
	<i>k</i>	<i>B</i>	<i>SE</i>	<i>p</i>	<i>k</i>	<i>B</i>	<i>SE</i>	<i>p</i>	
Sample characteristics									
Mean year of birth	161	-0.073	0.062	.240	161	0.025	0.025	.311	
Sample type	161	-4.122	1.631	.012	161	-0.650	0.617	.294	
Country	158	-1.110	1.008	.272	158	-0.410	0.419	.318	
Ethnicity	138	1.697	1.357	.213	138	0.072	0.542	.895	
Female	161	-0.508	1.041	.626	161	-0.226	0.420	.591	
Household shared with partner	76	-4.086	2.817	.151	76	-0.827	0.982	.402	
Married	133	2.061	1.872	.273	133	-1.043	0.765	.175	
Presence of children	101	<b>-6.340</b>	1.774	<.001	101	-0.939	0.769	.225	
Transition	161	1.270	1.377	.358	161	-0.490	0.560	.383	
Type of transition	25	-1.174	2.280	.612	25	1.815	1.175	.137	
Post transition	161	1.814	1.221	.139	161	-1.181	0.493	.018	
Type of post transition	34	4.341	3.565	.233	34	2.047	1.321	.131	
Baseline mean	—	—	—	—	161	-0.008	0.032	.813	
Variability in age	155	0.347	0.166	.039	155	0.122	0.064	.058	
Variability in relationship duration	107	0.366	0.208	.081	107	0.145	0.082	.079	
Methodological characteristics									
Time lag	161	0.220	0.212	.300	161	0.191	0.076	.013	
Dyadic data	161	-0.494	1.247	.693	161	-0.495	0.503	.327	
Measure (established)	161	-2.705	1.251	.032	161	-0.715	0.480	.138	
Measure (global)	131	<b>3.678</b>	1.066	<.001	131	-0.174	0.496	.726	

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*Note.* Computations were made with mixed-effects meta-regression models.  $k$  = number of samples.  $POMP_{T1}$  = mean POMP score of relationship satisfaction at Time 1,  $\Delta POMP_{year}$  = mean change in POMP scores of relationship satisfaction per year. Mean age was entered as control variable in all models. Mean age and mean year of birth were grand-mean centered prior to the analyses. Female, married, household shared with partner, and presence of children were proportions. Variability in age = within-sample standard deviation of age. Variability in relationship duration = within-sample standard deviation of relationship duration. The following variables were dichotomous: sample type (1 = community or student sample, 0 = nationally representative sample), country, (1 = USA, 0 = other), ethnicity (1 = white, 0 = other), transition (1 = relationship transition between Time 1 and Time 2, 0 = no relationship transition between Time 1 and Time 2), type of transition (1 = marriage between Time 1 and Time 2, 0 = birth of child between Time 1 and Time 2), post transition (1 = relationship transition shortly before Time 1, 0 = no relationship transition shortly before Time 1), type of post transition (1 = marriage shortly before Time 1, 0 = birth/adoption of child shortly before Time 1), dyadic data (1 = dyadic data, 0 = no dyadic data), and the two contrasts for measure of relationship satisfaction 1 (1 = established scale, 0 = ad-hoc measure; 1 = global satisfaction, 0 = adjustment measure). Baseline mean refers to mean of relationship satisfaction at Time 1 in the metric of POMP scores, and time lag refers to the interval between Time 1 and Time 2 (in years). Dash indicates that it was not meaningful to test the moderator in the model. Values in bold are significant at  $p < .003$  (significance level corrected following the Bonferroni method).

**Table 9**

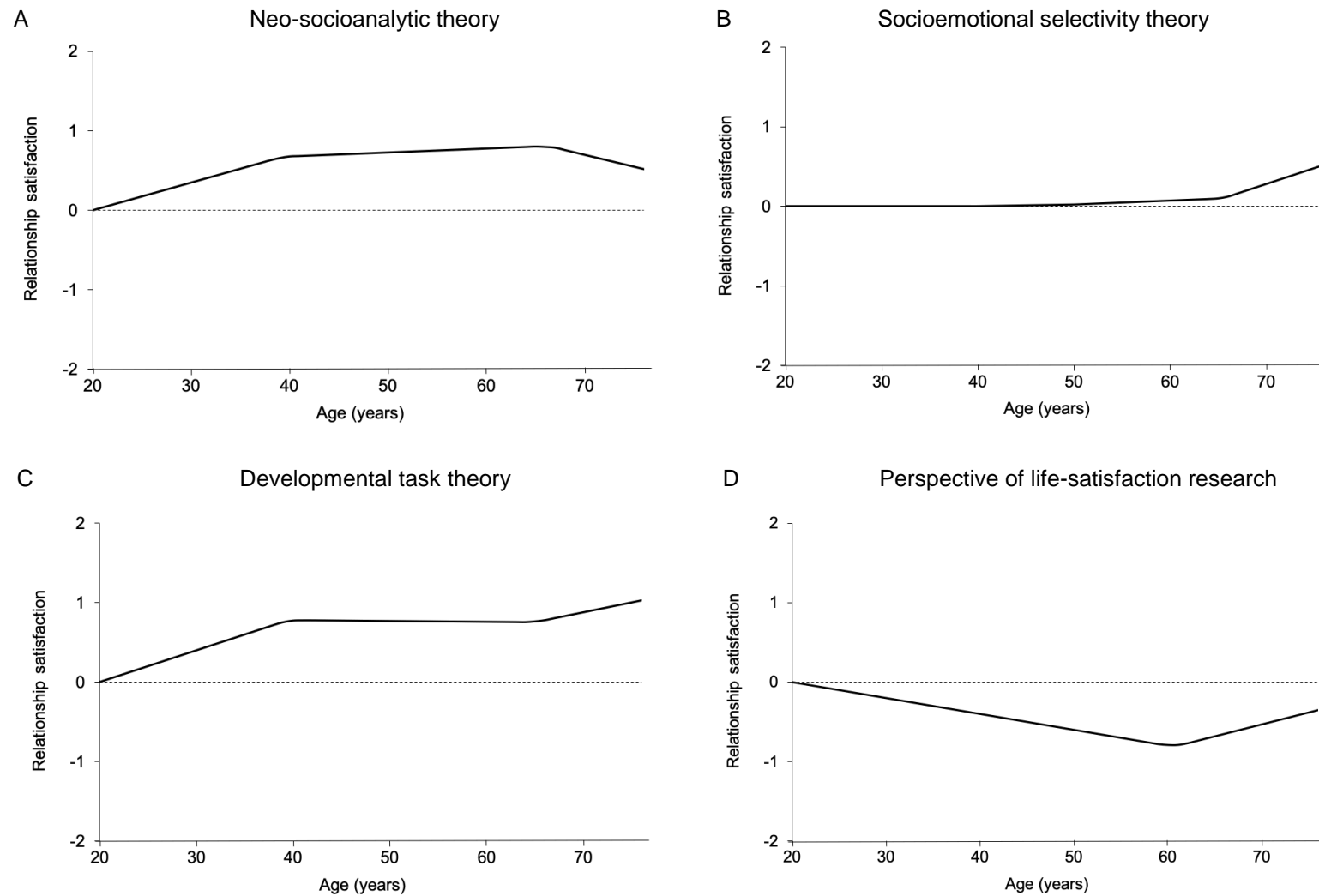
*Main Findings and Lessons Learned From Combining Cross-Sectional and Longitudinal Information in the Study of Development of Relationship Satisfaction as a Function of Age and Relationship Duration*

	Cross-sectional information		Longitudinal information	
	Age	Relationship duration	Age	Relationship duration
Effect size	Level of relationship satisfaction	Level of relationship satisfaction	Average rate of change in relationship satisfaction per year	Average rate of change in relationship satisfaction per year
Main finding	U-shaped curve	Complex, dynamic pattern	Decline	Decline
Size of effect	Above 77% of the maximum possible (highest score in young adulthood)	Above 77% of the maximum possible (highest score in the first years after beginning a relationship)	Small decline (middle adulthood) to large decline (young adulthood)	Small decline (later periods of relationships) to large decline (earlier periods of relationships)
Time perspective	Life span	Course of relationships	Within relationships	Within relationships
Research areas	Life-course research, developmental psychology	Relationship research	Relationship research	Relationship research
Example research question elicited by findings	Which factors contribute to lower relationship satisfaction in midlife?	Which factors contribute to higher relationship satisfaction in relationships of longer duration?	Which processes contribute to a decline in satisfaction in relationships in young adulthood?	Which processes contribute to a decline in satisfaction in the first years after beginning a relationship?
Implication	Providing psychoeducation on the average level of relationship satisfaction across the life span	Designing intervention programs that consider the average level of satisfaction over the course of a relationship	Providing psychoeducation on the normativeness of an average decline in relationship satisfaction in adulthood (to counteract unrealistic expectations)	Designing intervention programs that contribute to preventing the average decline in relationship satisfaction over the course of a relationship



**Figure 1**

*Illustration of Hypotheses Derived From Theoretical Perspectives on the Development of Relationship Satisfaction as a Function of Age*

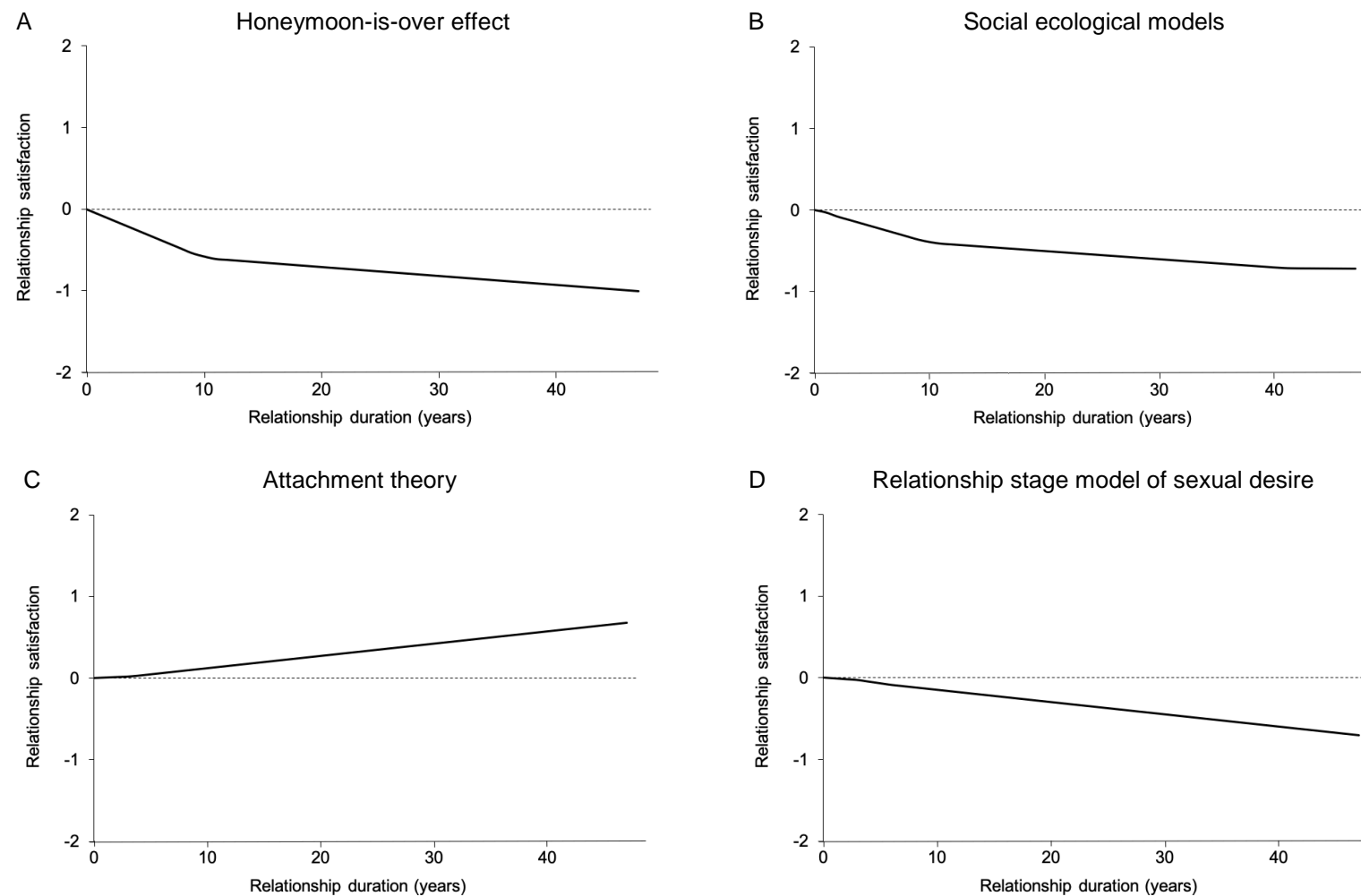


*Note.* All graphs show artificial data. Relationship satisfaction is given in the metric of z-scores with 0 as starting value of the trajectory.

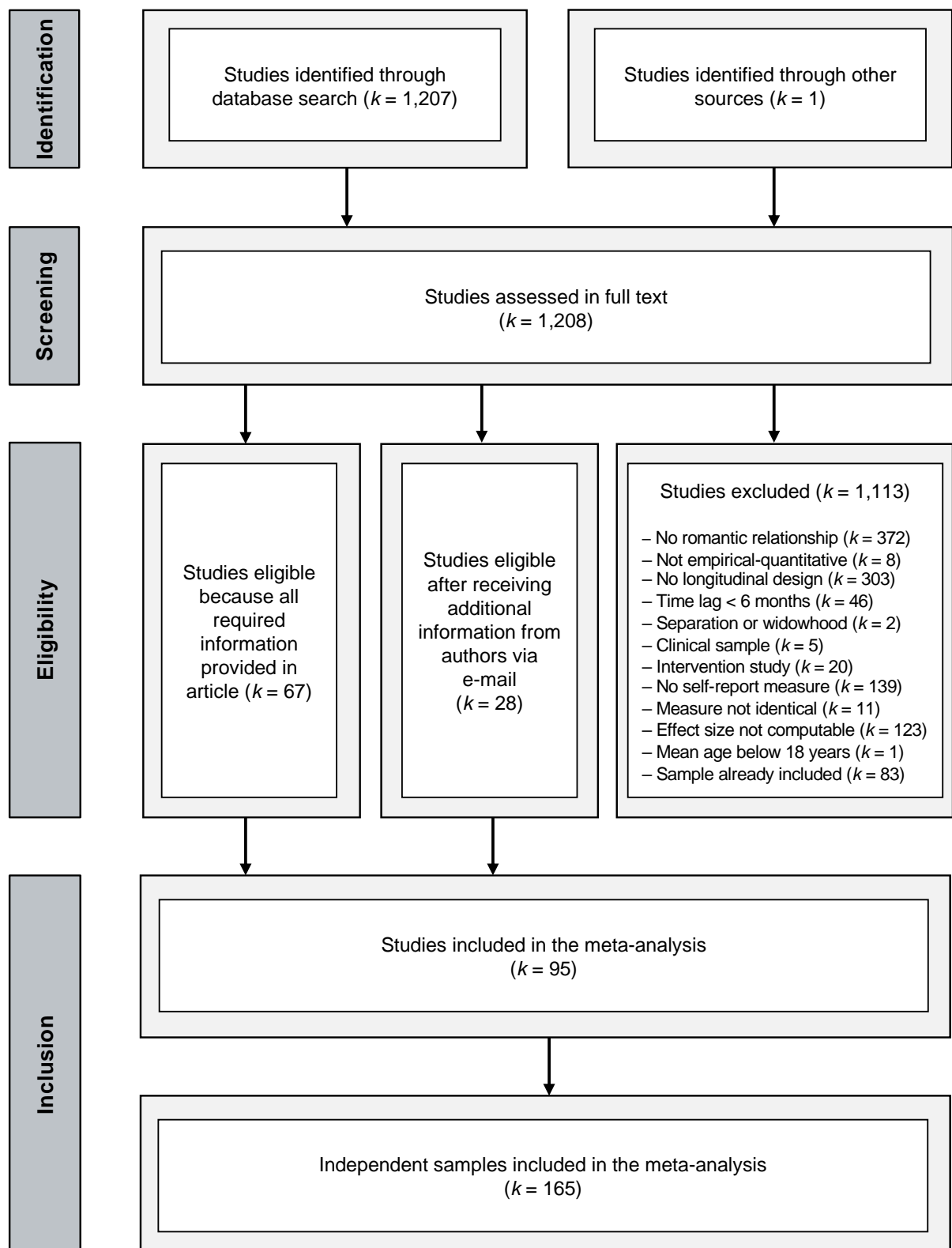
**Figure 2**

*Illustration of Hypotheses Derived From Theoretical Perspectives on the Development of Relationship Satisfaction as a Function of Relationship*

*Duration*



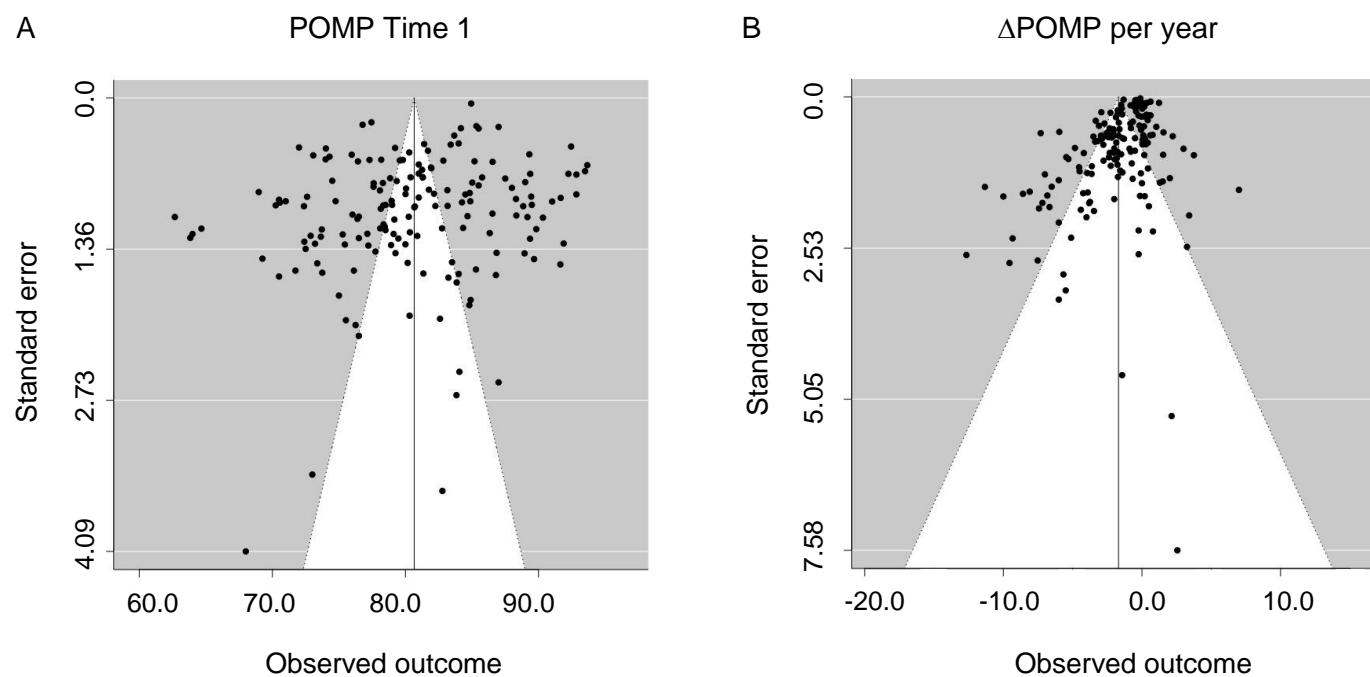
*Note.* All graphs show artificial data. Relationship satisfaction is given in the metric of z-scores with 0 as starting value of the trajectory.

**Figure 3***Flow Diagram of the Search and Selection Procedure*

*Note.* The diagram has been adapted from Moher et al. (2009).

**Figure 4**

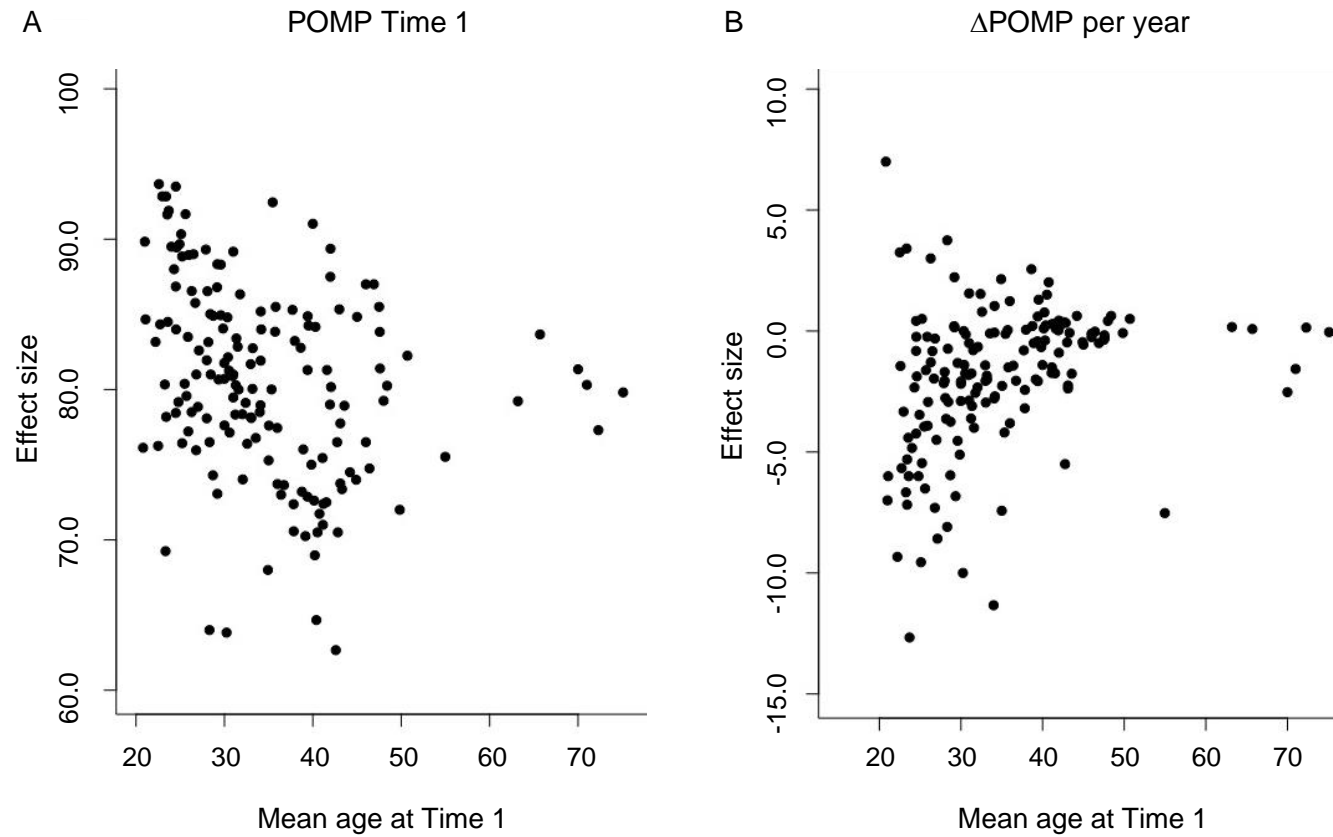
*Funnel Plots Displaying the Relation Between the Effect Size and the Standard Error of the Effect Size With (A) POMP Time 1 and (B)  $\Delta$ POMP per Year as Effect Size*



*Note.* POMP Time 1 = mean POMP score of relationship satisfaction at Time 1,  $\Delta$ POMP per year = mean change in POMP scores of relationship satisfaction per year.

**Figure 5**

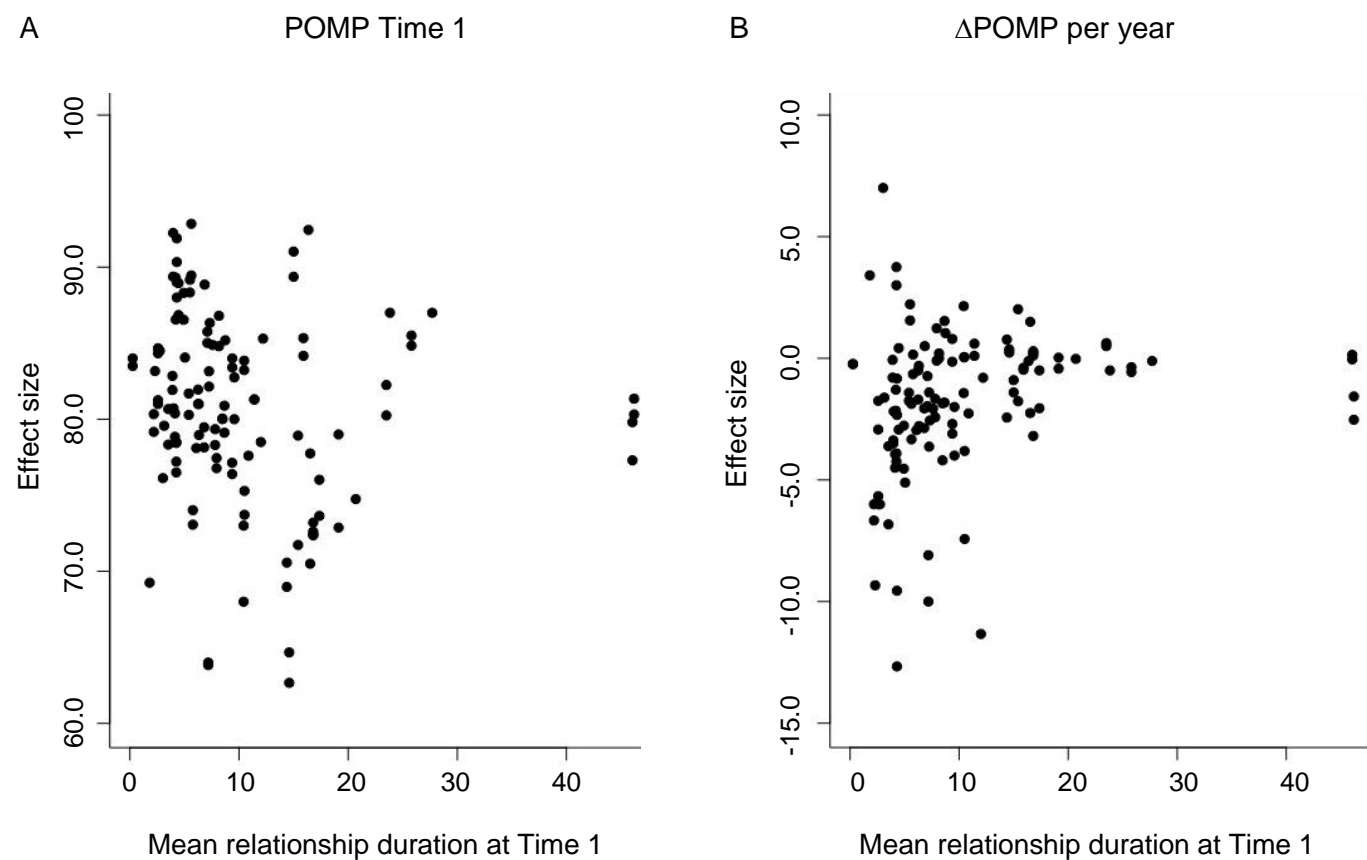
Scatterplot Displaying the Relation Between Age and the Effect Size With (A) POMP Time 1 and (B)  $\Delta$ POMP per Year as Effect Size



*Note.* POMP Time 1 = mean POMP score of relationship satisfaction at Time 1,  $\Delta$ POMP per year = mean change in POMP scores per year. Mean age at Time 1 is given in years. Zero-order correlations between mean age at Time 1 and effect sizes are shown in Table S9.

**Figure 6**

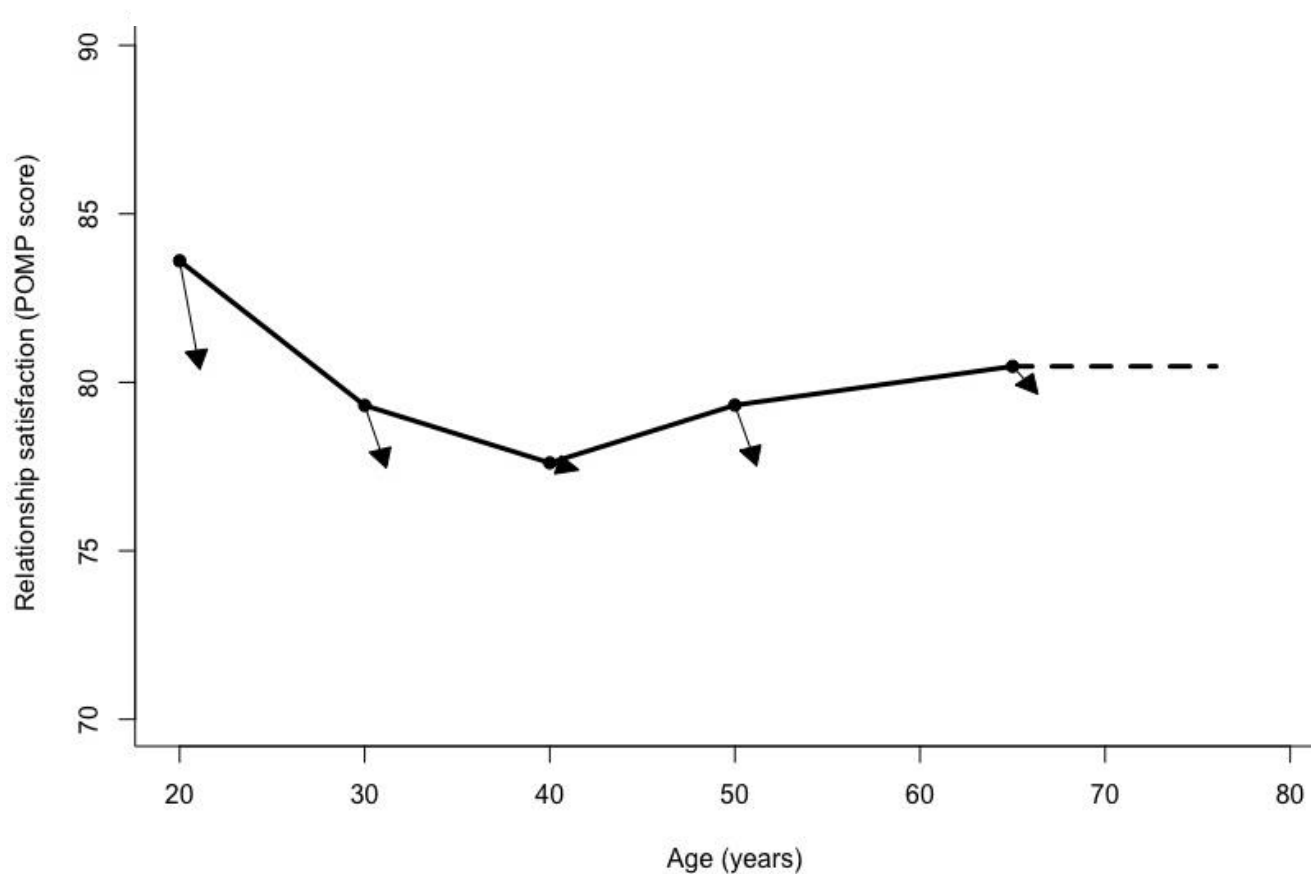
Scatterplot Displaying the Relation Between Relationship Duration and the Effect Size With (A) POMP Time 1 and (B)  $\Delta$ POMP per Year as Effect Size



*Note.* POMP Time 1 = mean POMP score of relationship satisfaction at Time 1,  $\Delta$ POMP per year = mean change in POMP scores per year. Mean relationship duration at Time 1 is given in years. Zero-order correlations between mean relationship duration at Time 1 and effect sizes are shown in Table S9.

**Figure 7**

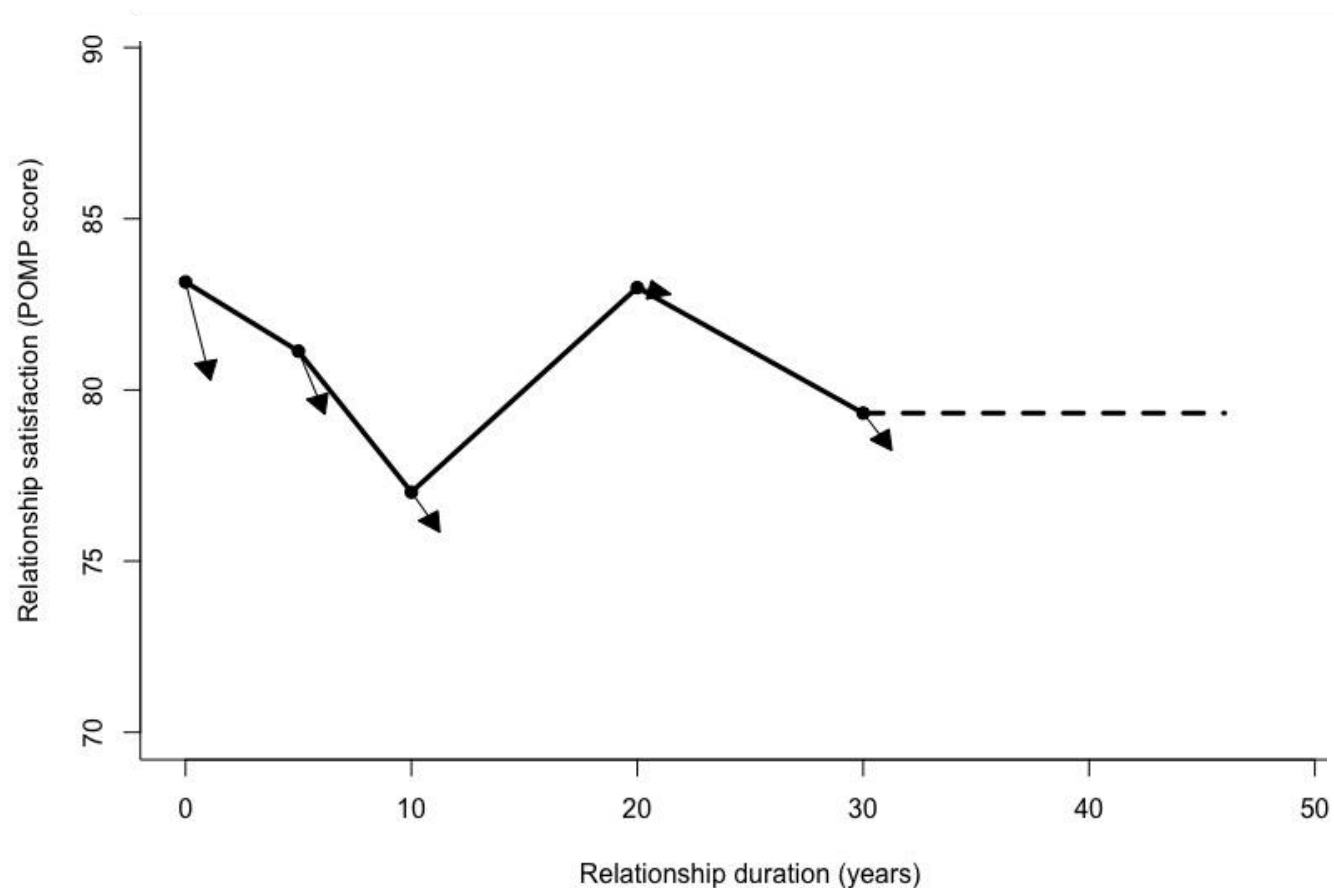
*Development of Relationship Satisfaction as a Function of Age, From Age 20 to 76 Years*



*Note.* The dots represent the estimates of  $POMP_{T1}$  per age group and are connected through a continuous line. The dashed line of the oldest age group (65–76 years) indicates that no samples were available above age 76 years. The vectors represent the estimates of  $\Delta POMP_{year}$  per age group. For reasons of readability, one vector is shown per group. Yet, each year included in the respective group has the same group-specific vector. Estimates for age 50 years and older are based on fewer samples (see Tables 3 and 4), implying that there is a larger degree of uncertainty around the estimates.  $POMP_{T1}$  = mean POMP score of relationship satisfaction at Time 1,  $\Delta POMP_{year}$  = mean change in POMP scores of relationship satisfaction per year.

**Figure 8**

*Development of Relationship Satisfaction as a Function of Relationship Duration, From 3 Months to 46 Years After Beginning the Relationship*



*Note.* The dots represent the estimates of  $POMP_{T1}$  per relationship-duration group and are connected through a continuous line. The dashed line of the longest relationship-duration group (30–46 years) indicates that no samples were available with a relationship duration of more than 46 years. The vectors represent the estimates of  $\Delta POMP_{year}$  per relationship-duration group. For reasons of readability, one vector is shown per group. Yet, each year included in the respective group has the same group-specific vector. Estimates for relationship duration of 20 years and more are based on fewer samples (see Tables 3 and 4), implying that there is a larger degree of uncertainty around the estimates.  $POMP_{T1}$  = mean POMP score of relationship satisfaction at Time 1,  $\Delta POMP_{year}$  = mean change in POMP scores of relationship satisfaction per year.